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# GLOBALIZATION AND ITS SOCIO-ECONOMIC CONSEQUENCES

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Globalization and Its Socio-Economic Consequences  
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The Faculty of Operation and Economics of Transport and Communications,  
Department of Economics

## **GLOBALIZATION AND ITS SOCIO-ECONOMIC CONSEQUENCES**

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# AN ENSEMBLE MODEL FOR PREDICTION OF CRISIS IN SLOVAK COMPANIES

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**Abstract.** Background: Globalization has increased not only the speed and importance of cooperation, but thanks to international relations between countries as well as between businesses, competition has also increased. Increased competition leads to increased probability of company failure. Early recognition of the threat of bankruptcy is therefore even more important. In 2016 in Slovakia entered into force the new provisions of Law No. 513/1991 Coll. Commercial Code on companies in crisis. The company is in crisis when it is in default or at risk of imminent default. Objectives: The goal is to create and evaluate an ensemble model that predict whether a Slovak company will find itself in a crisis in the following year. Paper also provide an overview of bagging, boosting, and stacking, arguably the most used ensemble methods. Methods and data: The ensemble model is created and tested on a sample of Slovak companies. The data used to create the model are from financial statements 2014 (47 414 companies) and model is tested on data from financial statements 2015 (64 757 companies) and 2016 (56 743 companies). The data was obtained from the register of the financial statements ([www.registeruz.sk](http://www.registeruz.sk)). To evaluate of the model, we use standard performance metrics (AUC, confusion matrix, RMSE, logloss, ...). Results: Using ensemble learning, we have created a model to predict whether a company will be in a crisis. Some of the model performance metrics: AUC = 0.89, RMSE = 0.28, Mean per class error = 0.20.

**Keywords:** default, company in a crisis, prediction models, ensemble learning

**JEL Classification:** G17, C52, C53

## 1. Introduction

When we create a prediction model, we often use a single instance of a single algorithm. And selection of the algorithm is a challenging art. However, it is more effective to use several algorithms together and create a composition to obtain the most accurate predictions possible.

Ensemble learning is the way which provide this functionality in a variety of ways. It uses several “basic” algorithms (or several instances of the same algorithm) to achieve better predictive performance than would be obtained from any of even the best of individual models. The original procedure was to combine so-called “weak models”. At present, a set of powerful but varied models is used more often. (Hsu, 2016; Tian & Yu, 2017)

The most popular methods to determine of the result from basic models are:

**Majority vote:** As with the election, what most voters (models) agree on, it will be the outcome.

**Averaging:** Taking the average of predictions from basic models (probabilities for the classification problem). Different weights can be assigned to individual basic models and thus determine their importance.

**Bagging.** (Bootstrap aggregation) is one of the most intuitive ensemble algorithms. Bootstrapping is a sampling technique in which we uniformly choose observations with replacement from original dataset to produce multisets of the same size as your original data. By increasing the number of a training sets we can't improve the model predictions, but it helps to reduce the variance error.

In the next step, we build a model for each of the bootstrapped samples and use the majority vote or averaging concepts to get the final prediction. Bagging can damage a stable model by establishing false variability.

**Boosting.** Boosting is a technique of building sequence of models, each of which learns to fix the prediction errors of a prior model. The first model is trained on the entire dataset and the following model is built by fitting the residuals and giving higher weight to those observations that were weakly predicted by the previous one. This process continues until a limit is reached in the number of iterations (100+) or accuracy. Final model is created by using weighted average of each model. Boosting is based on reducing the bias. This makes the boosting models predisposed to overfitting.

For example, Random Forest (bagging) and Gradient Boosting Machine or AdaBoost (boosting) are both ensemble learners.

**Stacking (Stacked generalization).** Stacking is using a (model supervisor, super learner, metalearner) that learns how to best combine the predictions of the basic models. Leo Breiman formalized stacking in his 1996 paper "Stacked Regressions". Stacking regressions method uses linear combination of subsets of predictors to improve prediction accuracy. To determine the coefficients in the combination Breiman used cross-validation data. The idea comes from David Wolpert (1992), but he didn't use internal k-fold cross-validation. (Breiman, 1996; Wolpert, 1992)

In 2007, the algorithm got the name, "Super Learner", when Mark van der Laan et al., proved that under reasonable constraints the Super Learner ensemble represents an asymptotically optimal system for learning. The modern Super Learners combine predictions from several methods by using k-fold cross-validation and minimizing a user-specified loss function. (Laan et al., 2007; Dixon, 2016)

The key benefits of ensemble models are better prediction and stability. Main disadvantage of ensemble models is that they reduce the model interpretability. (Verikas et al., 2010)

## 2. Company in crisis

In Slovakia came into force the provisions of Law No. 513/1991 Coll. Code of Commerce for companies in crisis. The company is in crisis when it is in default or at risk of imminent default. The default of a company is defined in law no. 7/2005 Coll. on Bankruptcy and restructuring as amended. Act no. 7/2005 Coll. about Bankruptcy and restructuring brings entrepreneurs the form of "judicial protection against creditors". The court will allow restructuring if it is shown that, in the case of a restructuring permit, creditors will be satisfied

more than in the case of bankruptcy. In such a case, it should also be in the interests of the lenders themselves to agree with the restructuring, because even if they are only partially satisfied during the restructuring process, it is often more than in the case of bankruptcy.

Under the law, a company is in default if it has liabilities to at least two entities and the value of its liabilities exceeds the value of its assets or if it cannot pay at least two financial liabilities to at least two creditors 30 days after the date due date.

A company is at risk of impending default when it has a low ratio of equity and liabilities. By 2016, a company is at risk of impending default when the ratio is less than 4 to 100. For 2017 and 2018 rates are 6 to 10 and 8 to 100, respectively. It should be emphasized that debt ratio of equity and liabilities varies from industry to industry. (Cisko & Kliestik, 2013) A ratio that could be a standard for an industry may be unmanageable for another one.

If a company is in a crisis because of negative equity and has at least two creditors, then it is required to file bankruptcy within 30 days. If a company is in crisis due to insolvency and has asked to pay its obligation, creditors can file for bankruptcy. (Boda & Uradnicek, 2016)

In the Slovak Republic, individually filed claims are included in the list of claims, while each registered claim is compared to the list of liabilities, accounting records and other documentation of the subject in bankruptcy. The disputed claims are subsequently denied within a period of 30 days. At the same time, the law adjusts the objective responsibility of the actively authorized persons for the damage to the creditor caused by the denial of his claim. (Kliestikova et al., 2017; Kliestikova et al., 2016; Majerova et al., 2015; Kliestik et al., 2017)

### 3. Data and models

The data used to create the model are from the 2014 financial statements (47 414 companies, 6 148 in crisis, 12.97 %) and model is tested on data from the 2015 financial statements (64 757 companies, 9 922 in crisis, 15.32 %) and 2016 (56 743 companies, 7 727 in crisis, 13.62 %). The data was obtained from the register of the financial statements ([www.registeruz.sk](http://www.registeruz.sk)) using API and C#.

We also acquired data for the year 2013 from the 2014 financial statement. These data are used to calculate the predictors for the year 2014. The same procedure is done with financial statements from years 2015 and 2016

Data from 2014 were divided in the ratio 75:15:15 - training, validation and ranking the basic models on the leaderboard.

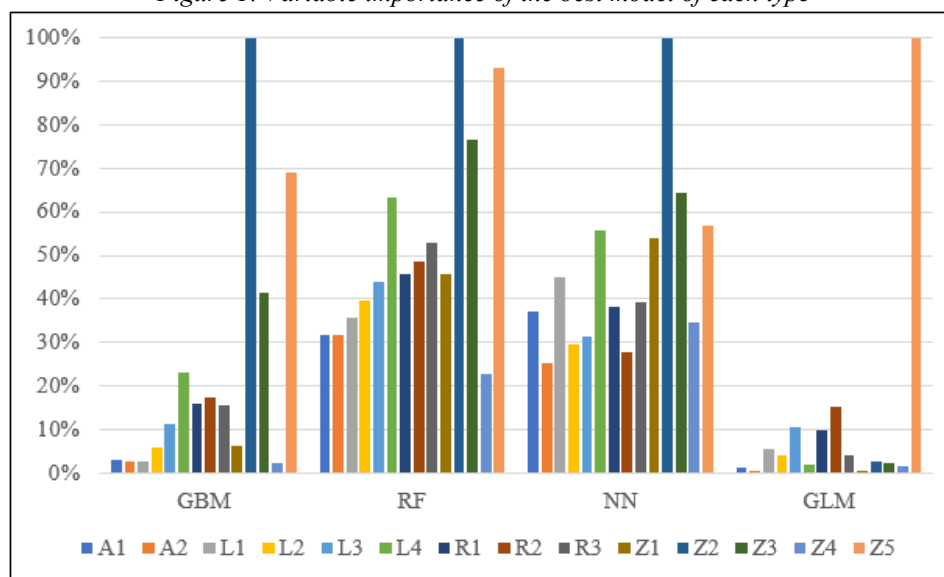
We had fourteen predictors: Total Asset Turnover (A1), Current Asset Turnover (A2), Cash ratio (L1), Quick ratio (L2), Current ratio (L3), Net working capital / Total assets (L4), ROAeat (R1), ROAebit (R2), Net profit margin (R3), Retained earnings / Total assets (Z1), Debt Ratio (Z2), Current liability / Total assets (Z3), Credit indebtedness (Z4) and Equity / Total liabilities (Z5). (Misankova et al.; 2015; Kliestik & Majerova, 2015; Rudorfer, 1995)

To determine health of an enterprise we check the following conditions:

1. Equity/Liabilities < 0,4
2. Quick ratio < 1
3. Earnings after Taxes < 0

If all three conditions are met, company is classified as “in crisis”.

Figure 1: Variable importance of the best model of each type



Source: Authors

Final model was created from a set of seventy basic models: gradient boosting machine (GBM), logistic regression (GLM), random forests (RF) and neural networks (NN). Each of the models has both advantages and disadvantages, and our goal is to find their best combination. (Tu, 1996; Bou-Hamad et al., 2011; Zhang et al., 1998; Jahrer et al., 2010). The models have preferred quite different predictors. In Figure 1 is shown variable importance of the best basic model of each type. Differences are also within models of one type. It results from the fact that models have different abilities to detect relationships between predictors and outcome, and interactions among predictor variables. Models was created and tested in R with H2O package.

## 4. Results

In Table 1 are shown performance metrics of the final model. The figures for 2015 and 2016 are similar, slightly better for 2016, which is mainly due to a more similar incidence of the feature in 2014 and 2016 than in 2014 and 2015.

Table 1: Performance metrics of the final model

	2014, validate part	2015	2016
MSE	0.080099	0.088793	0.080743
RMSE	0.283018	0.297981	0.284152
r2	0.280373	0.315626	0.313598
logloss	0.264118	0.288807	0.266404
AUC	0.892109	0.891440	0.896296
Gini	0.784218	0.782880	0.792591
Mean per class error	0.202489	0.202384	0.196567
Residual deviance	3 755.233295	37 404.612405	30 233.165731
Null deviance	5 428.312471	55 764.025692	45 182.892839
AIC	3 785.233295	37 434.612405	30 263.165731
Number of observations	7 109	64 757	56 743

Source: Authors

In Table 2 are maximum metrics of the final model at their respective thresholds. We can see that the threshold values are very similar.

Table 2: Maximum metrics of the final model at their respective thresholds

	2014, validate part		2015		2016	
	threshold	value	threshold	value	threshold	value
f1	0.1854	0.5604	0.2119	0.6070	0.1932	0.5899
f2	0.0777	0.6798	0.0731	0.7184	0.0827	0.7011
f0point5	0.3769	0.5336	0.3687	0.5828	0.4140	0.5730
Accuracy	0.5582	0.8880	0.3924	0.8734	0.4514	0.8861
Precision	0.8883	1.0	0.9222	1.0	0.9217	1.0
Recall	0.0309	1.0	0.0309	1.0	0.0309	1.0
Specificity	0.8883	1.0	0.9222	1.0	0.9217	1.0
Absolute mcc	0.1854	0.4965	0.1625	0.5335	0.1655	0.5240
Min per class accuracy	<b>0.0951</b>	0.8191	0.1024	0.8257	0.0948	0.8261
Mean per class accuracy	0.0777	0.8225	0.0922	0.8285	0.0827	0.8294

Source: Authors

In Table 3 are confusion matrices of the ensemble model built at the same threshold 0.0951, what is min per class accuracy from 2014.

Table 3: Confusion matrices of the final model (at threshold 0.0951 = Min per class accuracy from 2014)

Actual/Predicted	2014, validate part			2015			2016		
	no	yes	Error rate	no	yes	Error rate	no	yes	Error rate
no	5 080	1 122	0.1809	44 902	9 933	0.1811	40 492	8 524	0.1739
yes	164	743	0.1808	1 623	8 299	0.1636	1 333	6 394	0.1725
Total	5 244	1 865	0.1809	46 525	18 232	0.1785	41 825	14 918	0.1737

Source: Authors

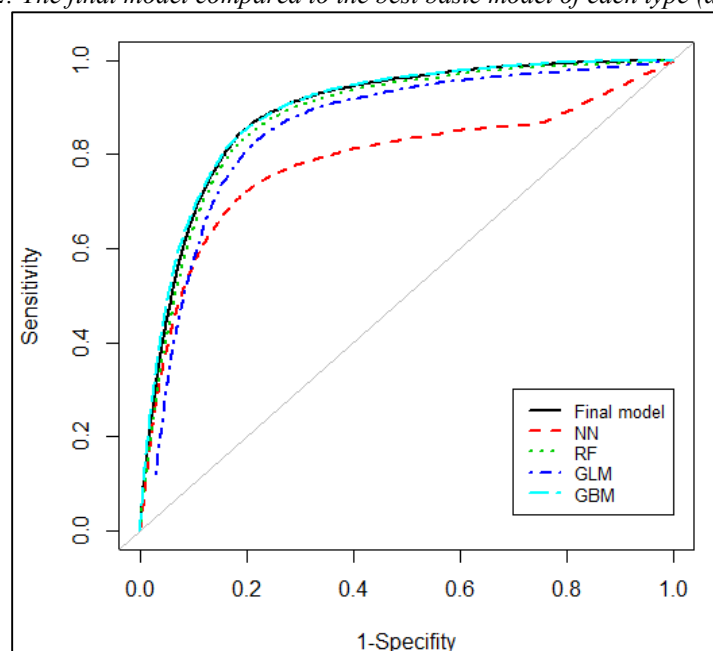
## 5. Conclusion

We have used ensemble learning to create a model to predict whether a company will be in the next year in a crisis. We used the data from the register of the financial statements. (www.registeruz.sk) Performance metrics have shown that the model is reliable.

It is also interesting to explore the performance of the basic models. Figure 2 shows the ROC of the final model compared to ROCs of the best basic model of each type in the 2015 data test. We see that the GBM model is slightly better than the final model

This is probably also due to the fact that the GBM models themselves also belong to the ensemble learning group.

Figure 2: The final model compared to the best basic model of each type (data 2015)



Source: Authors

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## THE IMPORTANCE OF SOFT SKILLS IN HUMAN RESOURCE MANAGEMENT

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**Abstract.** Boom of technology and rapid globalization process bring the ever-increasing demands on the personality of the managers and their competences. In addition to the so-called hard skills are getting into interest soft skills, which are crucial. These skills are not be replaced by computer and machines. Soft skills are associated for examples with creative and innovative approaches with effective communications, with good orientation in information, with teamwork, flexibility, satisfying of customer needs, etc. Especially for the generation Z the adoption of these soft skills is the actual topic. Managers and students preparing for the occupation of business management are facing the consequences of the global trends of automation, robotics and digitization in production and services. The aim of the paper is the analysis of the career assumptions of students with specialization in Economics and management (at the Faculty of Economics, University of South Bohemia in České Budějovice) in relation to a subsequent application of the graduate's career in selected jobs. The paper compares the results of personality tests alumni in the context of the current work position and compares them with soft skills in the database NSP. For selected students it has been analysed 4 working positions: an assistant, a financial manager, a professional bank worker and a professional accountant. Due to the wide complexity of being manager and emphasis on their competencies, it is necessary to these positions were fulfilled by persons who have the desired career assumptions for them.

**Keywords:** career, competency, career assumptions, soft and hard skills, Holland, McClelland, Schein.

**JEL Classification:** M12, M14, M53

### 1. Introduction

Competence is the ability, assumptions of an individual or a group, of an institution or an organization to handle certain activities, situations; or ability to assess certain phenomena knowing broader context or from a professional point of view. The words assumption, competence and ability are synonyms. (Sivák et al. 2011)

Irving & Malik (2005) state that, while earlier the need to achieve a certain level of education has been emphasized, today's labor market requires lifelong learning. Another prerequisite for

the successful adoption of career assumptions is successful personal development, which is a lifelong process. (Bedrnová et al., 2009) Career assumptions could be divided on hard skills and soft skills. (Bhatnagar & Bhatnagar, 2012)

Soft skills are a combination of personal qualities and interpersonal skills that help an employer perform their job are an increasingly important concern to business and they are much less tangible than hard or technical skills, which pose a challenging task in estimating the economic returns of soft skills. (Fan et al., 2017; Wesley, 2017) *For example three of the top six soft skills identified by the US Department of Labor are communication, teamwork and networking.* (Schutt, 2017) According to Robbles (2012) the top 10 soft skills are: integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethic. From research of Ibrahim et al. (2017) follows that: *„existence the relationships between employees' acquisition of soft skills, the training methodology adopted by the trainer, and work performance. The results indicate that the two predictors – soft skill acquisition and training methodology – significantly predict employee performance.“*

As the private companies call for more specialised knowledge and higher level of skills, many universities are concerned about the provision of knowledge and learning. *„A focus on soft skills allows schools to reframe how they think about the relationship among education, academic curriculum, and employment.“* (Hirsch, 2017) Highlighting the aspects of soft skills among students is a key element to have graduates who are competitive and able to face any situations at the workplace (Ali et al., 2017). *„However, it is often difficult for universities to identify exactly what kind of skills they have to instil into the future workforce.“* (Cacciolatti et al., 2017) And of course it is very hard to learn soft skills. (Shakir, 2009)

## 2. Methods

The aim of the paper is the analysis of the career assumptions of students with specialization in Economics and management (at the Faculty of Economics, University of South Bohemia in České Budějovice) in relation to a subsequent application of the graduate's career in selected jobs. The paper compares the results of personality tests alumni in the context of the current work position and compares them with soft skills in the database National System of Occupations (hereinafter NSP).

For finding competence of students 3 tests of career assumptions were used: test of John Holland, test of Edgar Schein and test of David McClelland. Then transactional analysis test of M. Klein was used for competency of effective communication.

John J. Holland has observed that people are looking for an environment that reflects their nature. He identified 6 types of personality by professional environment - realistic, tentative, artistic, social, enterprising and conventional. The work environment is chosen by the individual according to harmony with his personality. The harmony of these two attributes is the main contribution of Holland's typology. (Hersen & Thomas, 2006)

The typology of Professor E. Schein is based on an extremely extensive study conducted in collaboration with Masseur Institute of Technology in 1996. Its aim was to find out whether people show differences in relation to their career preferences and career choices. Based on the evaluation of values, needs and abilities, he developed a model in which he distinguishes five career types. (Chaston, 2010)

David McClelland and his collaborators have created theory, which is based on 3 needs. These needs are a major motivating factor in the work environment. It is a need for performance, the need for power and the need for friendship. (Robbins et al., 2013)

The paper is based on the questionnaires of above mentioned authors who are able to quantify the level of career competencies or assumptions. These tests were filled by students in the same 2 courses (EF JU) within 2 years. Probands were chosen by field of study (Economics and management). Respondents were finally 124. The sample was consisted of 70% of women and 30% of men. In the first step it was used a questionnaire research, as it has already mentioned it was used different career tests. The next source of information was a database of Alumni EF JU, which was established on the basis of a dial-up querying 2016. It contains information about the application of career advancement of alumni. The second step was to compare the career skills of graduates (of the Faculty of Economics of the University of South Bohemia in České Budějovice of the study programs: Management and economy) with selected work positions with the soft skills stipulated by NSP. It has been chosen 4 working positions: an assistant, a financial manager, a professional bank worker and a professional accountant. In order to compare the results of personality career tests with soft competencies according to NSP, it was created a methodology for the conversion of results. The test based on theory of Schein was used for soft skills: cooperation, creativity, flexibility, problem solving, leadership and independence. The test based on theory of Holland was used for soft skills: meeting customer needs and active approach. The test based on theory of McClelland was used for soft skills: influencing, efficiency/performance. The test based on theory of M. Klein was used for soft skills: effective communication.

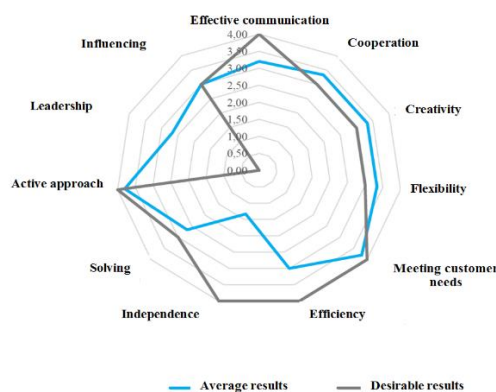
### 3. Results and discussion

The comparing personality test of students with career advancement shows these main results.

#### 3.1 An Assistant

The job position of an assistant is the 8<sup>th</sup> most frequently occupied position by students. Monitoring students on the position of an assistant achieve a high level of competence in the field of: active approach, meeting the customer needs, cooperation, flexibility and creativity. Students even have leadership, cooperation, creativity and flexibility beyond the competencies required by the NSP. On the other side students have an inadequate level of independence.

Figure 1: Career competencies of students in the position of an Assistant in relation to desirable competencies

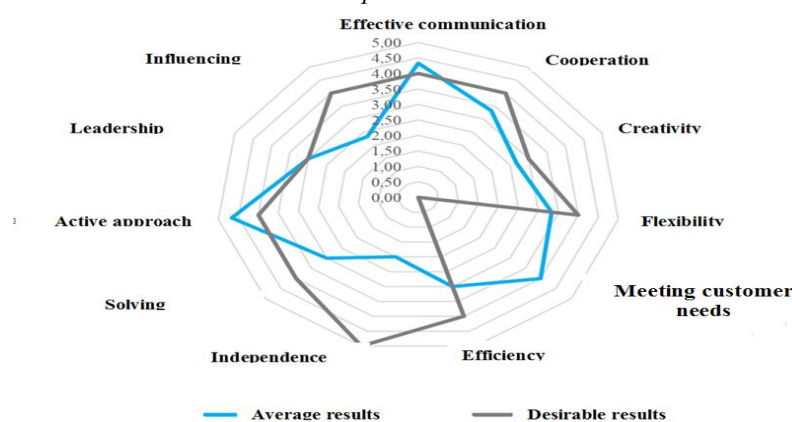


Source: own research

### 3.2 A Financial manager

The job position of a financial manager is the 1<sup>st</sup> most frequently occupied position by respondents. Monitoring students on the position of a financial manager achieve a high level of competence in the field of: active approach, effective communication, meeting the customer needs, cooperation and flexibility. Students even have meeting customer needs, active approach and effective communication beyond the competencies required by the NSP. “*Communicative competence development for master students in Management is of special importance. On the one hand, communicative skills and abilities are stated in the Bologna and UNESCO documents as key competences for any specialist with higher education.*” (Almabekova, et al., 2014) On the other side students have an inadequate level of independence, influencing and flexibility.

Figure 2: Career competencies of students in the position of Financial manager in relation to desirable competencies



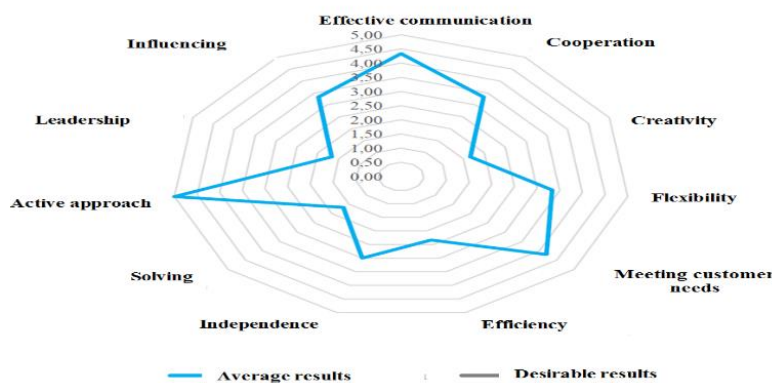
Source: own research

### 3.3 A Professional bank worker

The job position of a professional bank worker is the 5<sup>th</sup> most frequently occupied position by respondents.

Monitoring students on the position of a professional bank worker achieve a high level of competence in the field of: active approach, effective communication, meeting the customer needs, influencing, cooperation and flexibility. Results are not possible to compare with database NSP because the database does not focus this job position.

Figure 3: Career competencies of students in the position of Professional bank worker in relation to desirable competencies



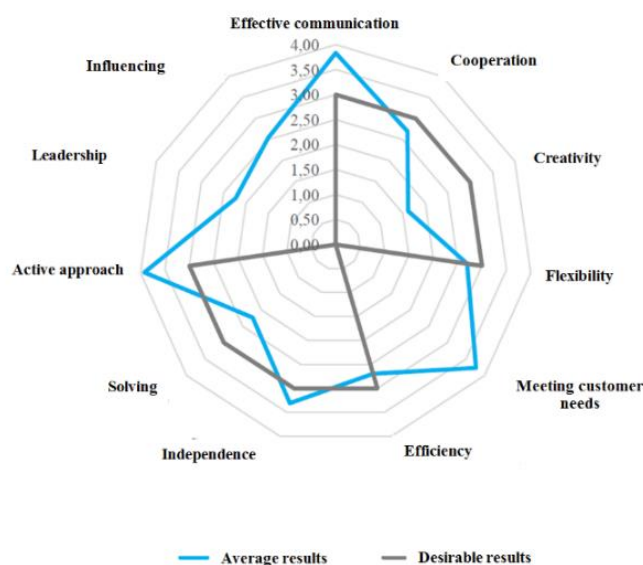
Source: own research

### 3.4 Professional accountant

The job position of a professional accountant is the 2<sup>nd</sup> most frequently occupied position by respondents.

Monitoring students on the position of a professional accountant achieve a high level of competence in the field of: active approach, effective communication, meeting the customer needs, independence. Students even have meeting customer needs, influencing, leadership, active approach, independence and effective communication beyond the competencies required by the NSP. On the other side students have an inadequate level of creativity.

Figure 4: Career competencies of students in the position of Professional accountant in relation to desirable competencies



Source: own research

## 4. Conclusion

It was analysed 4 positions for which the largest number of respondents was available: an Assistant, a Financial manager, a Professional bank worker and a Professional accountant.

It was found that despite the different work positions that were analysed, the graduates were competent in the area of satisfying customer needs, leadership, proactive approach, effective communication and influencing others. On the other hand, they were not competent in the area of efficiency, problem solving, flexibility, independence and cooperation.

The ability of students to solve problems it is possible to strengthen such as through solution innovative case studies, or case studies from real practice in the context of subjects. Solution of case studies can simultaneously strengthen both the autonomy of the students and their ability to work in a team.

For improving performance, one possible solution might be the introduction and continuation in selected subjects, which students will allow targeted acquisition of the skills involved in time management, work with thought maps multi-tasking, identifying priority tasks, but also selfmanagement.

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## USE OF CERTAINTY EQUIVALENTS WITHIN CAPITAL BUDGETING

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**Abstract.** Instability of the economic environment both at the macro- and micro-level, whether the in domestic or global economy, as the source of uncertainty and different risks force companies to behave rationally and react flexibly to new information and circumstances. Such kind of behaviour is also required within the capital budgeting that continues many-sided activities. Its important part is the assessing a profit potential of projects, taking into consideration time value of money, risks, alternative investments, and future opportunities. Risk of project CF is generally calculated in valuating of investments in the form of a risk premium added to the risk-free rate of return (starting point of the component of the discount rate, by which expected CF is converted to its present value). Searching for the risk premium is often associated with more or less problems of determination, therefore alternative options “to delegate” risks into the project appraisal are being searched. In keeping with the principle of risk equivalence between anticipated CF and discount rate, as an alternative of the risk premium is possible to choose to discount CF by the risk-free discount rate, while the risk will be reflected directly in the predicted (excepted) CF, which is the basis of so-called certainty equivalents method. In the context of this, the method of certainty equivalents at the theoretical level will be presented, referring to possibilities of its use in a practise of companies within their capital budgeting whether at the domestic or at international level.

**Keywords:** capital budgeting, certainty equivalent, cash flow (CF), risk

**JEL Classification:** G31, G32, O16.

### 1. Introduction

Investment activity in the general meaning of allocation of capital investments is important part of financial management of any company. This activity and the investment decision-making process on his own are exposed to the risk and uncertainty that follow mainly from the instability of an environment, where the company operates in or would like whether in the domestic or global economy. As a rule, risk and uncertainty in the global environment are greater than in the domestic markets.

Since investments represent current company's commitments in favour of future possible however, usually uncertain incomes, the investment decision-making process has to have a rational basis. Decisive parameters on which investors (in the general meaning) decide to invest, are the expected investment's utility (in the general meaning), risks and uncertainty which the investors have to face up, and managerial flexibility.



The integral part of investment decision process is the investment valuation (investment appraisal). The *valuation* is a general term for the process of determining *the value* of any assets, whether of financial or real character including a business valuation by applying a wide portfolio of valuation techniques. If we only pay attention to the *appraisal of investments into real assets – investment projects*, the main aim of this activity should be an appropriate assessing future profit potential of any investment projects, taking into consideration time value of money, risks incurred, uncertainty, alternative investments (if exist), managerial flexibility and generally limited sources. It is the key activity within the capital budgeting, which main objective is to select such kind of investment projects, which would be able to add as much value to the shareholders as possible. In relation to the capital budgeting the uncertainty is understood as the impossibility of reliable determination of future factors that could affect the project's CF. The risk represents a probability that project's results would differ from the results that the company anticipates. (Smejkal & Rais, 2003) It is perceived rather negatively, although it can occur even in a positive way not only from the theoretical (statistical) point of view, but also within the capital budgeting and overall investment activities. (Kramarova, 2016)

As regards various valuation methods of projects, there are many different approaches to their classification in the literature. Regardless of this fact, the discounted CF valuation methods (e.g. NPV, IRR, MIRR, and DPBP) are the most used valuation techniques in the practise of investment project appraisal mainly thanks their ability to take into account project CF, time-value of money, and risk, which the investor is exposed to. According to many authors (e.g. Dluhošová et al, 2011; Kral, 2015 etc.) they are suitable for projects that are characterized by the presence of risk. The currently applied discounted CF methodology was firstly presented by Dean in 1952 and its basis is the well-known *present value rule* – the value of the project is the present value of expected (estimated) project CF. Transformation of the project CF ( $V_{t+1}$ ) to its present value ( $V_t$ ) is conducted through the discount rate ( $r$ ). The discount rate is a function of the project's riskiness – risk and its effects are isolated to it. (Damodaran, 2005) The general formula of the present value quantification for simplified case of one period is:

$$V_t = \frac{V_{t+1}}{1+r} \quad (1)$$

The project CF represent a stochastic CF stream, so in the present value calculation it should be based on the mean value of CF –  $E\{V_{t+1}\}$ .

## 2. Certainty equivalents

### 2.1 Characteristics of certainty equivalents

Risk that is involved in the investment project is able to incorporate into the project's valuation using by different ways inter alia, by using the certainty equivalents.

*The certainty equivalent* is the value of a criterion that is from the point of view of the decision maker as valuable as the risk variant. In the financial terms, it is a guaranteed amount of money that would yield the same exact expected utility as a given risky asset with absolute certainty. In case of capital budgeting and investment decision-making process the certainty equivalent is used to define the investor's attitude toward the risk based on the relationship between the certainty equivalent and the mean value of evaluation criteria of the risk variant. The certainty equivalent value of the risky project CF if the amount that is just large enough that the investor would be indifferent between receiving the certainty equivalent value and receiving the results of the project CF. (D'Arcy, 1999)

The basis of certainty equivalents stands on the concept of utility applied in the economic theory and expects a rational behaviour of any economic entity. (Ben-Tal & Teboulle, 2007; Vinel & Krokmal, 2017) In this case, utility is a measure of preferences over some sets of goods or services and points to the individual satisfaction experienced by any economic entity in a position of consumer. Generally, the utility theory generalizes the principle of expected value maximization – it assumes that each economic entity has a personal utility function that assigns a utility value to every possible monetary income level that the entity can receive, such that the entity always wants to maximize the expected value of the utility. (Myerson, 2004) In the area of finance, within the capital budgeting, the theory of utility points to the rational behaviour of an investor, who chooses such kind of project, which will maximize investor's utility function or minimizes risk involved in assumed projects. On that basis, the certainty equivalents are a specific measure of risk and are considered mainly as an alternative to the method of risk-adjusted discount rate (RADR).

## 2.2 Risk-adjusted discount rate

*The risk-adjusted discount rate* is typically identified with the rate of return for the project under valuation (Sick, 1986), respectively with costs of capital usually quantified as weight average costs of capital (WACC). The costs of capital of the analysed project are influenced by the market risk. In case of international projects, the discount rate determined through the WACC could be adjusted to the instability of environment, where the project should be undertaken. It is recommended to use fudge factors that correct the risk-adjusted discount rate. Costs of debts refer to the effective rate, which the company pays for its current debts, costs of equity are usually quantified by using more or less sophisticated methods – CAPM, build-up method, dividend model, arbitrage pricing model, or possibly they are adjusted to individual requirements of investors, e.g. as the hurdle rate of other investment project (Mařík, 2011; Mařík & Maříková, 2015). However, it is recommended that the WACC should be used for those projects whose risk is at the same level as the risk of the whole company (investor).

In case of RADR method, the risk of project CF is incorporated to the discount rate ( $r_{risk}$ ) – into the denominator of calculation of the project's present value ( $V_t$ ) and the CF is expressed as the mean value of the future CF distribution ( $E(V_{t+1})$ ). The equation for RADR method is as follows. Again, the premise of simplified case of one period was applied.

$$V_t = \frac{E(V_{t+1})}{1+r_{risk}} \quad (2)$$

In the practise within the process of capital project appraisal, the costs of equity are mainly identified by using the CAPM or arbitrage pricing method. However, both methods were originally created for the financial asset valuation. (Fama & French, 2004; Valášková et al., 2015) Due to this fact, the valuation of investments into real assets and financial assets differ from each other. According to Wolffsen (2012), some differences are more ostensible:

- financial security is traded on a perfect, efficient market, however the market for a specific asset can be pretty imperfect (maybe in particular for specialised assets),
- return on a portfolio of securities is linearly combination of the individual returns; the CF of combined assets is scarcely that (actually, it seems that lack of linearity is a value driver in capital allocation),
- cost of regret is higher for real assets than financial assets, exit/entry from/to financial asset is more easier than that from/to a real asset,

- it is easier to estimate the statistical distribution of the return on a bundle of financial securities than to estimate the statistical distribution of the return on the bunch of real assets.

Except that, it is commonly assumed that the term structure of the discount rate is constant even in case of multi-period projects.<sup>1</sup> (Wolffsen, 2012) However, this approach is suitable only for such kind of projects, whose CF is exposed to the market risk, which increases at a constant rate. (Bar-Yosef & Mesznik, 1977) By applying single-period costs of capital, (the discount rate is the same for each of all future periods – what is needed to meet certain conditions) the RADR method, requires changes in the calculation or to apply other approaches to the project appraisal. (Kim, 1998; Sick, 1986; Wolffsen, 2012; Zamasz, 2011;) Based on this fact, the certainty equivalents method (CE method) is seem to be a good substitute of the RADR method. (Cheremushkin S., 2010; Picou, 2014; Zhang, 2010)

### 2.3 Use of certain equivalent method in the process of the project appraisal

In case of the CE method, the investor considers the project risk directly. The adjustment for risk is done in the expected CF ( $V_{t+1}$ ) by their conversion into the equivalent risk-free CF ( $CE(V_{t+1})$ ) in the numerator of the project's present value calculation ( $V_t$ ). The individual CF is adjusted to reflect the cash that is assured with little or no risk. (Picou, 2014) According this way of incorporation of the project risk, at first CF's risk must be evaluated, then investor must specify how much profit (earnings) to be received with certainty, will make him indifferent between the riskless and the risky CF. (Ehrhardt & Brigham, 2015) The cash flow reductions must be realistic, otherwise the project's present value would be biased. The conversion is possible to make for each individual risky CF in each year of project's valuation by applying different levels of risk. Such a way converted risky CF to certainty equivalents are divided by the risk-free discount rate ( $r_f$ ) to calculate the project's present value. It is also ensured that risk adjustments and adjustment of the time value of money are not in contrast to the RADR method combined<sup>2</sup>, which makes the adjustments easier to understand and usable in situations where the combined method is not feasible (D'Arcy, 1999) The equation for the calculation of the present value by using certainty equivalents of project's CF is as follow.

$$V_t = \frac{CE(V_{t+1})}{1+r_f} \quad (3)$$

It must pay equality that the utility of the certain equivalent ( $U[CE(V_{t+1})]$ ) is equal to the mean value of the utility function, which is recalculated by the market probabilities of the future random value ( $E[U(V_{t+1})]$ ). It must also pay equality of the present value of the project, which risk was incorporated into valuation by using both the CE method and RADR method. However, this rule is possible to keep rather at the theoretical than practical level mainly due to fact that the estimating certainty equivalent CF is not based on observable market data (is rather individual) in contrast to the RADR method. (Dlugošová et al., 2010; Ehrhardt & Brigham, 2015) On the other hand, there are also objective problems with the calculation of the cost of capitals, mainly costs of equity, depending on the applied method of their calculation. Nevertheless, if the risk-adjusted discount rate had been credibly determined then the certainty

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<sup>1</sup>As well – depending on the applied method of the costs of equity valuation – assuming that the CAPM is the most popular and beta factor of the project does not cover other risks except market risk, the risk-adjusted discount rate would be undervalued and thereby the present value of project's CF could be overvalued.

<sup>2</sup>Firstly, the involved risks are eliminated through the transformation of risky CF into certainty equivalent CF. Then the time value of money is ensured through discounting certainty equivalent CF by risk-free discount rate.

equivalents for CF in time “i” ( $CE_i$ ) would be the mathematical product of riskless CF in time “i” ( $CF_i$ ) and following ratio:

$$\frac{1+r_f}{1+r_{risk}} \quad (4)$$

### 3. Conclusion

The project valuation is an inseparable part of the capital budgeting and the basis for rationale investment decisions. Whether we consider company’s projects with the local or international scope, the final decisions must be taken under considering project’s risks and uncertainty. The theory and practise know three basic possibilities of incorporation risks into the project valuation – the RADR method, CE method, and real option method. In the paper, we focused mainly on the CE method that is considered as an acceptable alternative to the RADR method. The CE method allows to incorporate project risk directly in the expected CF. Except that, under the assumption that project CF is a stochastic variable, the CE method is able to consider risk for each CF stream individually that has a sense in case of multi-period CF. Within the RADR method, it is usually applied single-period risk-adjusted discount rate. It means that risk free rate and risk premium are considered to be fixed, in other words that systematic risk of the analysed project and market risk premium are constant for each CF in each period of project valuation. However, specific conditions must be met to be the approach correct. The next advantage of CE method is that it does not mix the value of money of the project CF with the project’s risk, by which is the structure of the present value of each CF more transparent. As well, the method allows to investors to incorporate in the process of the present value calculation their own risk preferences. On the other hand, in contrast to the RADR method, the CE method is not based on the market data, so there is no reliable way of identification of certainty equivalents to the risky CF. Each managerial approach to their identification could be different. As well as a weakness of the CE method is consider that the present value of the project CF, which were transform into their certainty equivalents, is not easy to interpreted due to fact, that there is no clear contribution to the increasing of the shareholder value.

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## QUALITY MANAGEMENT OF TRAINING IN TERTIARY EDUCATION IN THE CONTEXT OF GLOBALIZATION

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**Abstract.** In the context of globalization, an international market for educational services has emerged. International demand has come into conflict with country differences in supply. The choice of the procedure for knowledge assessing determines the whole system of the organization of the educational process. Two types of exam procedures are analyzed in the article. The first one is typical for United States universities, namely: the exam with the right to pass exams ones more only after re-training. The second is typical for Russia: student has the right to take the exam again twice in case of failure of the first attempt. The first kind leads to the appearance of number of re-learners, which makes it impossible to fix the number of years of study. Each student has his own number of years of study and an individual schedule. Such a subject-based training system differs from the time-limited system suitable for the examination procedure of the second type with the dismissal of students who failed the exam. The article compares the positive and negative aspects of these two systems and shows the possibility of constructing on their basis a more positive model that incorporates their advantages. The results of the socio-psychological research carried out by the authors show the preferences of the students of Russian universities to the second type of examination. Students prefer be expelled from the university, if failing three attempts to pass the exam to alternative to be re-trained. The reasons for this choice are two: significant loss of time for re-training and money for tuition and the suspicion that the university will specifically create conditions for failure to earn on re-training.

**Keywords:** globalization and higher education, quality of the education, quality management of training, tertiary education management.

**JEL Classification:** I21, I23, I28, J24.

### 1. Introduction

In the context of globalization, student flows between countries increased. A significant difference in the organization of training led to the need for a Bologna declaration aimed at some unification of the stages of the learning process. But the problem of incompatibility remains for transfer students, in assessing the results of examinations, in recognizing diplomas and so on. Now, higher education is becoming a global service provided by quasi-companies in an increasingly complex and competitive knowledge market. (Majercakova & Madudova, 2016) As part of the unification process, international organizations emerged, for example, European Association for Quality in Higher Education (ESG-ENQA). They are aimed at standardizing the quality of education in accordance with the criteria they have developed.

Education sector is under growing pressure worldwide to improve the quality of education and increase its performance. (Bohm & Bohmova, 2016; Hunady et al., 2016) Many countries are modifying their education systems under the influence of globalization. But at the same time, there are significant country differences in education systems. Therefore, it is interesting to analyze the advantages and disadvantages of the most different of them: the USA and Russia.

Historically, the type of organization that shows the best results wins more often. The last decades saw a shift towards the American education system, just as in the late 19th century the German system was considered to be an irrepressible authority. Today, the growth in the number of free online training courses generates a third version of the system, adapted to the global market. He forces to cancel the concept of the examination session and the dismissal of underachieving students from the university, re-training, to modify the concept of the curriculum and much more. This system is adjusted for the free conduct of the student and is very cheap, since it does not require academic premises, equipment, teachers in the same number. It shows the new format of the exam, eliminating disputes about what kind of contact learning system to be. Instead of forcing an inefficient system to work intensively, it is more important to change the system itself.

The quality of training depends on many factors. We will focus on the key differences in education systems at the stages of the student's learning process from enrollment to degree.

## **2. The quality of the faculty. Academic freedom**

The quality of training is determined by the quality of the staff of the faculty. The only system for passing university courses, however spectacular it was, would have been fruitless, if there had not been a unique team of teachers. A good faculty also makes the university a center of innovation (Hiadlovsky et al., 2016), facilitates the startups. (Gregova & Dengov, 2016; Misankova, 2016)

In one German study (Luttera & Schröderb, 2013), in order to become a tenured professor, sociologists in Germany on average get their first permanent position as a university professor, 15.54 years have passed on average since their first publication. They have published an average of 3.99 SSCI journal articles, 7.87 non-SSCI articles, 2.58 mono-graphs, 1.74 edited volumes, 17.06 book chapters, and 7.94 "gray" publications. On average, 9.46 of these publications are in English. At the time of hiring, a typical sociologist has received 0.37 academic awards and spent 40 months abroad.

In the US, the quality of faculty staff depends on the academic freedom of teachers. The quality of education is also related to the academic freedom of students (AAUP, 1940). The necessary conditions for the normal functioning of the faculty are the guarantee of employment, self-government and autonomy of universities. (UNESCO, 1997; AAUP, 1970; Beiter et al., 2016.)

After the expiration of a probationary period, teachers have continuous tenure, which creates the basis of intra-university democracy and reduces bureaucratic distortions in the management of the university. This is a key difference with the Russian education system. In Russia, permanent state intervention continues, and path dependence effect is not overcome. (Lyakin & Benson, 2016)

After 2012 to date, the Government is reducing the number of teachers, reducing the number of universities and the plan for admission of students in such a way that the released salary fund is used to raise the salaries of the remaining teachers. Instead of permanent employment,

teachers sign an effective contract for one two, less than three years. The short-term employment illness creates an atmosphere of general fear among teachers, a real danger of being fired. This disgusts the young. In 2012, 146 doctors and 440 candidates of sciences left the country, in 2013 147 and 324, in 2014, 207 and 420, in 2016, 121 and 223 respectively. (Russia's state statistics service, 2016)

### **3. Evaluation of the quality of education for admission to the university**

The quality of training largely depends on the selection of successful apprentices.

In Japan, in order to pass the entrance examinations in the best educational institutions, many students attend special training schools (Juku) in addition to the usual classes or within one year to two years between secondary school and university. In the US, Ivy League graduates find a better job thanks to selective selection at admission, and not because they have higher quality of education. The main estimate of a high school graduates is a weighted average of grades, GPA (Grade Point Average). As an additional indicator, the student's place in the group is used for this indicator. This evaluation system is built on trust in school teachers, and at the same time is objective enough, since it sums up their estimates in proportion to the complexity of the material being studied.

Not all, but more than 2000 universities take into account SAT assessment when assessing applicants. The competitor of this test is ACT. The SAT and ACT generally test the same types of content. These tests are beneficial for higher education institutions to choose the best when the number of applications is overwhelming. (Schiffrin, 2014) For example, Stanford reported 42,000 applications for roughly 1,700 freshmen in the Class of 2018.

AST and SAT in the United States are offered by private, competing organizations and conducted 6 times a year. The SAT is owned and published by the College Board, a private, nonprofit organization. It is developed and administrated by the Educational Testing Service. Students 11 and 12 years of study take it after they sign up and pay for the exam. Many students in the United States begin to take these exams two years before admission to the university. For those who have not finished high school there is a GED certification test.

In Russia, all graduates of the secondary school take the Unified State Exam (USE). Received scores serve as a pass to universities. The system is based on distrust to school teachers in their assessment of knowledge. As a result, in the last grades of the school, the goal of studying the subject in its completeness and variety is narrowing towards the preparation for the fulfillment of the tasks of the USE test. Unlike the US, the test is administered by the Ministry and it is mandatory for all graduates. You can repeat it in a year. USE should be improved both in content and procedure, as it focuses on memorization, rather than on student development. It should not be mandatory for everyone, only for those who decided to go to university. Applicants should be given the opportunity to repeat the test when they are ready for it.

In the EU education market, there is a disproportion between the growing supply of training services and the declining number of applicants. The growth in the number of universities and the reduction in the number of applicants reduce the level of selection. The reaction in the EU countries, for example in Slovakia, to this problem lies in marketing efforts to attract entrants. (Majercakova & Madudova, 2016) The reaction in Russia is to reduce the number of universities by the Ministry by concentrating and reducing the admission plan with the dismissal of superfluous teachers.



#### **4. The principle of academic freedom of a student**

From the public point of view, the main goal of the university is to offer the labor market the specialists corresponding to the needs of that labor market. Quality education is the basis for overall factor productivity. (Balcerzak & Pietrzak, 2016) From a private point of view, education exists for students. In the first case, it is the object of influence, and in the second it is the subject, the client.

The educational systems of the US and Russia differ in the subordination of supply to the labor market and the needs of students. In the US, the student himself is in the first place. Therefore, there is freedom of choice of subjects of study (academic freedom of the student). Education serves as an intermediary between the student and his future employment. (Durana & Chlebkova, 2016)

The position of the mediator creates a number of advantages for the university. Since the trainee chooses what to learn, the quality of the result and the responsibility rests with him. The right to choose a wide range of subjects is an incentive to study. It also removes from the university the responsibility for the compliance of acquired competencies with demand in the labor market. From that right of choice, the individual training schedule for each student is logically followed.

In Russia, education is subordinated to the task of training future workers. (Kirillovskaya et al., 2016) Therefore, the student is obliged to fulfill the curriculum prescribed to him by the university. The freedom to choose elective objects is very limited. Choosing one of them means giving up the other. Thus, the student is a passive recipient of external decisions. Programs imposed on students without academic freedom of choice cause the students' demands to the administration to eliminate unnecessary subjects. (Gogolova, 2016) In the case of subject teaching, students simply would not have chosen them.

In the context of globalization, the exchange of students between universities in different countries is expanding. A fixed curriculum creates a lot of inconvenience if a student has left for an exchange to another university. He is forced to take missed exams at his university in his free time, which violates his work and rest regime. In the absence of a fixed curriculum, there are no such problems.

The ministry sees the mission of the university in training personnel for the national economy as part of the directive plan for admission to universities and under the direct control of the quality of training through compliance with standards and with the awarding of graduates with a unified state diploma. From such an essentially rejecting market understanding of the mission follows a development strategy by reducing the number of students to the needs of the national economy in the workers. Accordingly, the graduate's responsibility for adjusting to the labor market rests with the ministry and university. Centralization of the calculation of the need for specialists leads to errors in planning, and more than half of the graduates work not according to the specialty received at the university.

Here it is useful to recall the well-known phrase of Friedrich Hayek. We have not to shape the results “as the craftsman shapes his handiwork, but rather to cultivate a growth by providing the appropriate environment, in the manner in which the gardener does this for his plants.” (Hayek, 1947)

However, the principle of freedom of choice of subjects has disadvantages. Our sociological study of students of two universities showed that students are at a loss in their choice and make mistakes in the collection of subjects. Their knowledge of the specialty is fragmentary and

superficial. A purposeful curriculum in technical specialties gives more chances to get a knowledgeable, well-trained specialist. This advantage is absent in humanitarian professions, where different combinations of the courses are possible.

## 5. The principle of the retraining

The second principle, characteristic of the education system in the United States - is a re-study of the course in case of failure in the exam. The Russian system adopted a different approach. You can take the exam twice if the first attempt fails. An additional exam session is assigned for this purpose. This difference of systems leads to a difference in the duration of the training. In Australia, as in the US, retaking exams is prohibited without retraining. The student is forced to re-learn (and pay for) the course, the exam for which he failed. In Germany, you can take exams only when you consider yourself sufficiently prepared. The appearance of a significant number of re-learners makes it impossible to limit learning by a fixed number of years, as in Russia, where students are divided into 1, 2, 3 and 4 year's undergraduate students. We have to use another parameter - the number of courses studied, estimated by time, necessary for their study in credit hours.

In the United States, one credit hour is given at 3 hours of lectures, laboratories and self-study activities of the student every week on a training course. For example, at 16 weeks in the semester, a minimum of 12 and a maximum of 19 credit hours of workload per semester are set (in some universities 18). The student's status is determined not by the year of training (course), but by the number of credit hours collected. Freshman - 0-29 hours, Sophomore - 30-59, Junior - 60-89, Senior - 90 and more. Summarizing the work of the student in the semester, the evaluation indicator of the quality of education is the GPA. If the rate of 4 credits and in it you got 4.0, then in general you scored 16 points. The other course in 5 credits when you score 3.6 will bring you 18 points. Total - 34 points in the numerator and 9 credits in the denominator - and your GPA is 3.778. The usual GPA requirement is not lower than 2.0, i.e. "C". Minimal GPA 3.0 (B) is required in order to study at the graduate school and in various exchange programs. Students who received an average grade in the semester for one credit hour above 3.75 (A) are included in the rector's list of awards, 3.25 (B +) in list of the dean's awards. Repeating the educational process for the laggards, until they reach an acceptable level of competence, improves the quality of education. This system is not compatible with free training, since it would allow an unlucky student to prolong the learning process many times. His costs would consist only in the loss of time, but not in the loss of money. In general, it is a system with soft culling.

The negative aspects of the retraining system are the substantial costs for the underachieving student, the loss of his time and money. Who enter the university expect to earn a bachelor's degree in four years. In reality, it's much longer. According to the data of the National Center for Education Statistic, the percentage of those who receive a bachelor's degree in For-profit institutions on time is just 22%, the remaining 78% study for more than 4 years (NCES, 2016). This indicates the second shortcoming of the system - the desire of institutions to earn on re-training. However, the preparation quality is improved due to the re-training. In general, the US system is different by much more strict control of knowledge and the possibility of choosing for the student the parameters of the training services by time, by the amount of knowledge, by the place of instruction.

The Russian system, with the expelling of students who have failed the exam, means a hard culling. But in practice, due to the right to retake of the exam double, weak students continue

to study with low scores. As a result, both the weak and the strong receive the same state diploma. This differentiation of the level of graduates is most dangerous, for example, in medicine. A rigid system, in fact, leads to a low quality of the result of training also for another reason. Universities in Russia receive funding from the federal budget, which allows half of the students to study for free. Another half of them pay for themselves. Expelling of weak students means a loss of income for a university and is equivalent to a fine. Therefore, a dilemma arises: to expel and lose income or maintain income and lose the quality of graduates.

Often universities prefer to support the level of income at the expense of quality. So the situation calls into question every diploma obtained. In a system with re-training, it is advantageous to put underestimates to earn on the re-training and improve the quality of education. With an expel system, it is advantageous to put an overestimate to also save income, but at the same time quality is reduced. In addition, retaking exams gives rise to corruption. That is why the system with three exams is preferred by Russian students. They are not afraid that they will be expelled, but can learn without straining. We conducted a survey of 243 students from two universities in St. Petersburg. The questionnaires offered a choice between the US and Russian rules for taking the exam and actions in the event of a failure in the exam. The questionnaire contained questions related to finding out the frequency of absences in school and their causes, questions on identifying the characteristics of responding to a stressful reaction in conditions of complete self-preparation to retake the exam. The following results were obtained:

As a reason for miss the classes, 18% of students indicated the need to earn money, poor health 72%, family circumstances, childcare 16%, professional sports 2%, disrespectful reasons 9%. According to the degree of vegetative reactions in response to the stressful situation of the exam, only 20% of students can be referred to the norm. 37% have an elevated and 43% high level of reaction (fear, headaches, sleep disturbances, etc.). Despite such a painful perception of control of knowledge, students prefer the Russian rules of passing the exam from three attempts with the removal from the university at a failure. The US rules of one attempt to pass an exam with repeated training on the subject found support among 27% of students who regularly miss classes. Typical answers were: "Unreasonable waste of time and money for re-training". "This option will be suitable for a small part of the population that has enough money and time. In Russia, the popularity of the idea of re-training will be low". "There is a suspicion that the university will specifically create conditions for failure and to earn on re-training". At the same time, respondents admitted that the US system would force them to learn.

Since both systems have both advantages and disadvantages, it is possible to build a mixed system. In general terms, it can be described as based on the principles of re-education and academic freedom of students. Since the socio-psychological study showed the students' commitment to retake exams, they should be able to take exams twice and, in case of failure, they are offered retraining. Such a system eliminates the removal, giving a paid chance to continue training. Elimination of the risk of dropout from the university will significantly reduce the stress of examinations, contributing to the preservation of health for the younger generation. Along with the systems examined, the market of distance educational services is becoming increasingly popular today. (Hraskova, Seeman, 2016) This approach is a threat to existing contact training, and a serious competitor, because it is significantly cheaper and has a huge audience of subscribers. On-line courses on the Coursera platform are generally available free of charge. Teachers are replaced by speakers reading the text, and contact exams replace computer control programs without the participation of teachers. Instead, a call-center, a support service and a personal training manager are in contact with the student. The profession

of the teacher dies off, while little is noticeable. He in the long run turns into a researcher in the laboratory and developer of training complexes and simulators. Already now, universities use video materials, electronic textbooks, interactive tests, forums, discussion panels in which students exchange messages with the instructor and with each other in the usual manner of posts. Distance learning is a product of globalization and the electronic age, and it should be seen as a revolutionary trend that alters the existing approach to quality management of study.

## 6. Conclusion

In Russia, for the effective management of universities, it is strategically beneficial to develop the competition of universities in the market of educational services with the abolition of state-recognized diplomas for the purpose of brand competition. To bring the training system in line with the conditions of globalization, it is necessary to: 1. Abandon the strategy of reducing the number of educational institutions and the training services in them. 2. To change the ministry's approach to universities, namely: to consider the university as an autonomous organization, competing in the market and controlled by the buyer of the service. 3. Actively develop distance learning first in the field of humanities education.

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## GLOBAL LIBERALIZATION OR MACROECONOMIC PLANNING: MONETARY ASPEKT

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**Abstract.** The problem of the current stage of economic development is the need to review the basic institutions of the market system and to seek a new model of economic development and growth. The era of globalization is replaced by de-globalization, the principles of free trade, the pressure of speculative capital, de-industrialization caused by the overflow of labor and capital from the real sector to services, in particular to the financial sector are violated. Financial markets do not pursue the goal of developing the entire economy. They are subject to the ideology of "capital market liberalization," which facilitates the rapid export of capital and the regime of global governance. Economic policy is the reflection and realization of economic interests of certain groups or sectors. It is important to solve the problem of equitable distribution without which it is impossible to maintain sustainable economic growth in the long term. If we do not manage the process of resource allocation in the economy, labor and capital will flow from manufacturing to extractive, to trade intermediary, from the real sector to the financial sector. It is necessary to build economic policy at the level of macroeconomic planning. Development policy is a combination of planning and market self-organization.

**Keywords:** real sector, financial sector, globalization, deindustrialization, macroeconomic planning. monetary policy, inflation, economic growth.

**JEL Classification:** G28, G38

### 1. Introduction

The problem of the present stage of economic development, necessity of revision of the basic institutions of the market system and the search for new models of economic development and growth. The rate of change outpaces the speed of response to an adequate solutions. Processes of globalization are changing with the displacement of the center to the direction of protecting national interests, regional and geopolitical grounds. The era of globalization gives way to de-globalization, violated the principles of free trade, the pressure of speculative capital, deindustrialization, caused by the overflow of labor and capital from the real sector to the service sector, particularly to the financial sector. (Novotny, 2016) Proponents of globalization and free trade, based on the theory of comparative advantage David Ricardo, and currently, the

theory of the "Washington consensus" have a policy of the dominance of the developed countries to the detriment of the national interests of less developed countries. (Kirillovskaya and all. 2016) This makes the less developed countries establish closer regional economic ties among themselves. As an example, we can talk about the so-called "Visegrad Four" (V4) - the Czech Republic, Slovakia, Poland and Hungary. Relatively small EU countries need this in order to be able to successfully defend their interests in competition and partnership with larger and stronger countries (FRG, France and Italy). (Gregova & Dengov, 2015; Duncan, 2014)

Any economic policy is doomed if it is given to the will of the elements of the foreign exchange market. Freedom that is granted to the movement of capital, has a devastating impact on the foreign exchange market, and thereby, more rocking, the exchange rate is not conducive to the growth of investment and economic growth, and leads to its destabilization. (Altunyan & Kotcofana, 2016) Financial openness becomes a source of increased macroeconomic instability. (Regnerova & Salkova, 2016; Mishkin, 2009)

## **2. Global liberalization or macroeconomic planning: the monetary aspect**

The processes of globalization contribute to the growth of interdependence of national economies (Kramarova & Valaskova, 2015), the intensification of contradictions in the development of the world community (Tokárová, 2015), the increasing dependence of national economies from a limited number of transnational corporations. Despite the ambiguity of the definition of "globalization" in modern economic theory (Nový, 2015), most authors agree that it gives not only a positive potential to the world community, but also increases the risks and threats for its development. (Šoltés & Štofko, 2015) One of the negative results of globalisation becomes the dominance of developed countries and their largest companies, to the detriment of the national interests of less developed countries. (Harumová, 2015) The problem of globalization is that governments act for the sake of profit and the interests of the few.

Growing inequality leads to turbulence of the economy. So John. Stiglitz in his book "the Price of Inequality" (Stiglitz, 2012) notes that financial markets do not pursue development of the entire economy. They are subject to the ideology of "liberalisation of the capital market", contributing to the rapid export of capital and the regime of global governance. One of its main promises is that the economy and society will only get the benefits from reducing inequality and increasing equality of opportunities. Economic policy is a reflection and realization of economic interests of certain groups or sectors. (Mikhailov et al., 2016; Chang, 2016)

Similar problems are observed in the Russian economy, as well. A conflict of interests from the financial sector and the real one. For the banking sector orientation at a high interest rate, free floating exchange rate and contraction of the money supply, with the aim of targeting inflation. As a result, we have expensive money and high margin on lending and Deposit transactions and as a consequence impressive profit of the banking sector by the end of 2016 (over 900 billion rubles, an increase in nearly 5 times), the volume of transactions on the foreign exchange market exceeds GDP 15 times. Look at the economy from the position of the financial authorities and the centre for strategic research, chaired by A. Kudrin: the money restriction, justification demonetization of the economy and withdrawal of state funds in foreign debt securities, further privatization and orientation to private investment, reduce government involvement in the economy – here are advices to current macroeconomic policy.

The real sector with a focus on reducing interest rates, expanding the objectives of the Central Bank with a focus on targeting economic growth, the abolition of foreign exchange liberalization, the increase in the money supply and stimulate consumer demand. The

theoretical platform for the implementation of those ideas is the program of the Stolypin club. Each of them is suitable for their own way to the problem of economic growth. Ways are different, but the goal is one. Although the quantitative goal may not reflect the quality condition of the welfare of the majority. The structural divide between sectors of the economy where on the one hand concentrate financial resources and on the other hand there is acute shortage of them. Financial and monetary policy should be aimed at providing employment and flow of money between sectors of the economy.

The current model of economic development does not provide the stimulation of manufacturing industry, the development of the real sector of the economy and efficient allocation of resources between economic sectors and social groups. If we do not manage the process of resource allocation in the economy, labor and capital will flow from manufacturing industries in mining, in trade intermediary, from the real sector to the financial. Overflow of resources due to institutional and structural discontinuity, as well as the de-industrialization of the national economy is necessary to be really managed, and it needs to go back to using strategic planning, the law which was postponed until 2019. Russian banks in the absence of planning mechanisms and limitations behave as a conventional structure to increase the profits, and the high volatility of the exchange rate their activity is concentrated in the financial sector, not in real. The interests of the majority of the population do not coincide with the policy of the government. As a result of this pursued liberal policy is the strong stratification of society and widespread discontent and the violation of social stability. It is important to solve the problem of equitable distribution without which it is impossible in the future to maintain sustainable economic growth.

The worsening economic situation have not made our monetary authorities to monetary policy stimulus, limited only by the increase on the tax burden on the business, combined with administrative pressure. Russia until recently was in line with this ideology, by destroying its own production, specializing in the export of raw materials and falling into dependence on the Western financial system. The consequence of globalization was foreign exchange liberalization, which is due to the low level of financial development and a weak institutional environment has increased external risks.

"Liberal" foreign exchange legislation introduced to the free movement of capital, and the argument concerning the rejection of the use of elements of foreign exchange control to enhance in the future international position of the national currency in the conditions of financial constraints requires rethinking.

Any economic policy is doomed if it is given to the will of the elements of the foreign exchange market. The freedom which was given to the movement of capital had a devastating impact on the currency market, and thereby, more swinging exchange rate, did not contribute the increase in investment and economic growth, and led to its destabilization. Financial openness has become a source of increased macroeconomic instability. Tight monetary policy combined with a liberal policy of capital movements in the context of high volatility on commodity markets lead to speculative capital movements.

Assessment of the role of fiscal and monetary policies, their impact on the economy served as a controversial issue between representatives of neoclassical and Keynesian theories. In recent years, the Russian scientific community engaged in extensive discussions about the adequacy of current monetary policy to today's realities, meanwhile the estimates are often directly opposite.

In the "Main directions of unified state monetary policy for 2017 and 2018 and 2019" is stipulated that the Bank of Russia conducts monetary policy within the inflation targeting regime based on controlling domestic demand. In this approach, the main channel of influence



of the Central Bank on monetary and credit conditions in the economy and, ultimately, inflation become the interest rates. Acting through interest rates on the demand for goods and services, the Central Bank influences the growth rate of prices in the economy.

Our monetary authorities to achieve acceptable inflation target conduct a moderately tight monetary policy by limiting the amount of money in the economy and high interest rate. The fight against inflation should not be an end in itself. Suppression of inflation at any cost does not justify itself, because in this case, the outside attention is another goal of economic policy which is sustained economic growth. The policy of inflation targeting has a negative impact on economic growth. In this context it becomes relevant the establishment of the optimally acceptable level, with minimum costs of social reproduction, and promote economic growth. Moderate inflation can have a stimulating effect on economic growth. Overly restrictive monetary policy may push the economy into recession, and too soft threatens falling into the trap of stagflation for years to come. Here arise questions about the priorities of monetary policy, as well as its degree of rigidity.

Economic growth and inflation – are two specific interrelated indicators. The policy of "strict inflation targeting" in the short term while ignoring the macroeconomic environment is not optimal. The impact of inflation on economic growth differs depending on the level of economic development of the country. In countries with a high level of financial development and quality of institutions is said a low level of inflation compared with the developing. The long-term growth is negatively affected by a high rate of inflation: for developed countries the threshold is 3%, and for the developing is 10-12%. (Drobyshevski et al., 2016) The reduction of inflation below the threshold values can cause more damage on the economy than benefits.

The achievement of low inflation is seen as the main goal of monetary policy in maintaining long-term economic growth. However, an important parameter for the economy are not inflation, but real interest rates for the non-financial sector and lending to non-financial sector, which grows proportionally with the money supply.

It is necessary to expand and reduce the cost of lending, without fear of accelerating inflation. With regard to the dependence between the growth rate of the money supply and the rate of consumer inflation, it should be noted here that the growth of the money supply on the contrary leads to a decrease in consumer inflation. Contraction of the money supply in real terms has always led to a drop in GDP. (Altunyan, 2015; Prasad, 2014) Russia's GDP is highly dependent on the real money supply.

The increase of the monetary base to GDP from 2007 to 2015 in Russia amounted to 0.7 times, and in China it was 3.2%, in Europe 1.5 times. The monetary base in real terms fell by 30% and is 35% of GDP.

After the reduction in the rate of growth of the money supply, fall in lending in Russia in conditions of economic decline there is a structural surplus of liquidity, i.e. available funds are not channelled into the economy in connection with high interest rates. Low inflation is achieved with too high price. It must have a logical continuation in the form of proportionally lower rates on loans. But the ruble rate on corporate loans rose from 10% to 15% from 2011 to 2015. Interest rates on loans and for business are 3-5 times higher than the rate of lending of foreign banks. In terms of the investment of a famine, falling consumer demand, the real sector is able to accumulate monetary emission without pressure on the currency and consumer markets. (Lyakin, 2013) We meanwhile observe a permanent restriction of money supply by the Bank of Russia, while in most developed countries government and Central Bank have systematic support to their economies in the form of financial investments and the provision of

state guarantees. (Ruščáková, 2015) With this as the main threat to the stability of their economies, they do see not the inflation but the deflation. (Jarý, 2015; Ma, 2016)

Another unpleasant side effect of the mode of IT — the unpredictability of free-floating national currency. In conditions of high volatility of commodity prices, the choice of free floating exchange rate has exacerbated the situation in the domestic economy. Still there is a high share of imports in commodity resources of retail trade. In 2016y. — 40% (in 2014y. — 42%). This means that the hops of the exchange rate will immediately lead to inflation burst, as has happened more than once. In an open economy you should not target inflation in a free swimming course. (Ryazanov, 2013) If we are not able to manage the course, we will not be able to control money supply. Cash flows need to be controlled and not be the source of speculation. We do not control the financial system, without controlling the movement of money. A financial bubble is building on the foreign exchange market. It is important to control cross-border movement of money as it is in China, and to prevent capital flight. China still has not liberalized exchange controls on the capital account. Inflation targeting regime is not necessarily accompanied by relinquishing control of the exchange rate. For example, in the Czech Republic, where the inflation targeting regime is implemented under a soft exchange rate pegs. Pure inflation targeting may lead to high fluctuations in the exchange rate, which through the effect of the transfer - negatively affects long-term economic development. Management of the exchange rate under inflation targeting reduces the gap between actual inflation and its target, lowers inflation expectations and has a positive effect on economic growth.

In countries with developed economies and with a very developed financial market, the Central Bank could be limited to inflation targeting. But in a developing country, impregnated structural imbalances in the macroeconomics and Finance, such simple recipes do not seem convincing. Policy aimed at hard keeping of the inflation in the short term at the target level while ignoring macroeconomic conditions (so-called "strict inflation targeting"), is not optimal. That's why Central banks have adopted "flexible inflation targeting", in which the deviation of inflation from target level in the short periods provided that at longer time intervals the rate of growth of prices on average approach the target.

Low inflation is achieved through the impoverishment of the population, reduction of solvent demand of the population, real disposable income, due to the drying of the economy. Inflation should remain low not only due to demand reduction. Real disposable money incomes of the population in 2016 has decreased on 5,6%, and the cumulative depth of compression over the three years of the crisis is very close to 10%. Meanwhile the share of the population living on incomes below the subsistence level, is increasing for four consecutive years, from 2013. Army of absolute poverty by the end of 2016 rose to 19.8 million, or 13.5% of Russians, according to fresh data of Rosstat. The share of wages to GDP in Europe is 60%, and we have 35%.

As noted by George Stiglitz: "it is Impossible to revive economic growth through savings associated with a reduction in demand, leading to further reduction of production and employment." (Stiglitz, 2011) According to L. Erhard: "Customer demand should moderately outpace production capabilities." (Erhard, 1993)

### 3. Conclusion

Russia – it is a typical representative of the group of emerging market countries, which are characterized by certain structural features.

Firstly, such countries have great potential for long-term economic growth. They are capable of steadily development at a rate significantly exceeding the growth rate in developed countries.

Secondly, there is a low effectiveness of the institutional environment in the broadest sense. This is evident not only in the weakness of the national financial system and its strong dependence on short-term capital flows, but in the low quality of governance, which is reflected in the lack of fiscal and monetary discipline.

Thirdly, low investment activity is manifested in the excess savings above the savings due to the high level of uncertainty. Strong social gap in income distribution, low income of majority of population with high concentrations of minorities tend to increase savings with limited effective demand.

Fourthly, the Russian economy is also characterized by strong dependence on commodity exports, which makes it particularly sensitive to market shocks in the global market of hydrocarbons. In such circumstances, the monetary authorities have a difficult task — to ensure the full potential of economic growth in view with constraints and risks typical for emerging markets.

We must learn from reality, and not rely on the theory divorced from reality. The potential of the rise of the Russian economy exists, but it is prevented by ideological disunity in the theoretical approaches. In such situation, taking into account peculiarities of the Russian economy, the most appropriate are the following actions by the monetary authorities:

- the current regime of a moderately-tight monetary policy in terms of external sanctions failed to achieve the stated goals: reducing inflation, stability of national currency, economic growth. On the contrary, the result of inadequate monetary policy has become a deepening recession and increasing social preventive;
- CB is very important to maintain a fine line between stimulating economic growth and prevent the increase of inflation. In this regard, it is important to track directions of target use of credits, and do not permit their outflow to the FX market. The time of monetary growth has come instead of keeping unproductive cash and budgetary constraints. Therefore, it is advisable to adhere to the Central Bank linking the possible range of inflation and economic growth;
- in an open economy we should not target inflation in a free swimming course. It is important to control cross-border movement of money and prevent capital flight. Inflation targeting regime is not necessarily accompanied by relinquishing control of the exchange rate;
- it is necessary to build economic policy on the macroeconomic planning level. Development policy is a combination of planning with market self-organization. A system that allows us to negotiate the balance of income and expenses of citizens, the balance of the enterprises and the state budget is a strategic planning system algorithms in terms of calculation of the efficiency of selection of new technologies from the point of view of setting the whole economy on the needs of the government.

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## LOAN POLICIES AND ECONOMIC DEVELOPMENT IN A GLOBALIZED ENVIRONMENT

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**Abstract.** During the global economic crisis, Romania was forced due to the context to sign some loan agreements with the World Bank. As it can be assumed, it is difficult to separate the effects and impacts that the World Bank's loans have had on the economy of Romania, because the Romanian government acts in collaboration with other international financial institutions like the International Monetary Fund, the European Bank for Reconstruction and Development, the European Investment Bank. The purpose of the present research is to determine the impact of the World Bank loans to Romania during the global financial and economic crisis. As part of the research, the main factors that influenced the Romanian policy of foreign loans and their impact have been identified. Also, the paper contains the main effects of these loans to the economic and social development of Romania during the 2008-2014 period. The paper also contains a series of recommendations for improving cooperation between Romania and the World Bank in order to strengthen the economic and social growth recorded by Romania in recent years. Data analysis was done by multiple linear regression method. The main results show that Romania's partnership with the World Bank had a positive impact on the economic development of the country. The main areas in which the effects were noticeable are: fiscal management; public administration, energy, health and education. The model developed by Romania can be of interest for the other countries of Central and Eastern Europe too.

**Keywords:** economic crisis; loans policy; macroeconomic balances

**JEL Classification:** M2; M21; M38.

### 1. Introduction

Economic development requires a plurality of quantitative, qualitative and structural changes of the mechanisms and organizational structures in the economic field. It also requires changes in the way of thinking and behaving of people. In other words, there cannot be economic development as long as some social prerequisites are not met and without changing the institutional framework so as to enable the planning and the implementation of changes in the economic, social, cultural, administrative, environmental and legislative fields. Economic development means looking at how economic growth is promoted in various countries through the improvement of factors such as health, education, working conditions, domestic and international policies, and market conditions. Macroeconomic and microeconomic factors related to the structure of developing or developed economies are scrutinized so as to figure out how the respective structure can generate economic growth. (Popescu et al., 2016) Following the financial crisis that began in 2008, Romania's economy was stabilized with the support of

financial assistance programs from the World Bank, International Monetary Fund and the European Commission. From 2013 on, these programs were expanded and thus the Romanian economy started to recover. (Androniceanu, 2017; Jankiewicz, 2017) Though more slowly, investments have recovered and will reach a rate close to the pre-crisis one. On the other hand, imports were buoyed by strong domestic demand, but the current account deficit has increased only marginally since exports continued to grow, especially in the services sector. Changes in the tax code and salary increases during 2016 and early 2017 will have a significant impact on the economic growth projected for 2017. Fiscal incentives may boost a growth beyond potential of the real GDP in the period 2016-2017. The main challenge will be to ensure a balanced and sustainable growth in the future. (Carra, et al., 2016) The employment rate has increased and is expected to maintain an upward trend, especially in sectors with high added value. However, the strong emigration, including highly skilled workers, combined with an aging population is a challenge for a competitive economy. Public finances were stable in 2015, but they are expected to deteriorate due to increasing costs and reduction of VAT and other taxes. Romania has achieved in 2014, the medium term objective, namely a deficit of 1% of GDP in structural terms. (Androniceanu, 2015) In 2015, improvement in tax collection enabled Romania to maintain its medium-term objective, despite spending slippages. However, new tax cuts in 2016 and 2017 and increase of public sector wages are expected to raise the deficit to 3% of GDP by the end of 2017. With the completion of the financial assistance program, market confidence will be based on maintaining financial sector stability and the implementation of fiscal policy and sustainable structural reforms. (Valter et al., 2016) The third balance of payments assistance program for Romania (2013-2015) ended in September 2015. Given the payments under the first program (2009-2011), Romania will be subject to post-program surveillance until the spring of 2018, when it is estimated that 70% of the EU loan will be repaid. Maintenance of favorable market conditions and of prospects of a balanced growth, and the promotion of positive social and labor market are related to the implementation of structural reforms to improve competitiveness, employment and social cohesion (Sedláková, 2016). Regarding the progress in reaching the national objectives of the Europe 2020 Strategy, Romania has achieved good results in the following areas: greenhouse gas emissions, renewable energy, energy efficiency, tertiary education and reducing the number of people at risk of poverty or social exclusion. (Vasile et al., 2016) More efforts are however needed regarding employment rate, intensity of research and development and early school leaving. (Kaplanova, 2016) Romania's economic growth was among the highest in the EU in 2016. (Andrei et al., 2016) Growth has been robust since 2013, being determined by (i) strong exports resulted from good crops and a significant industrial production in 2013 and 2014, and (ii) gradual recovery starting from 2014, of domestic demand. (Androniceanu, 2014) A relative moderation of economic growth, is expected in 2017 (about 3.7%), but will remain above its potential. Investments have recovered from the fall of 2013 and are expected to sustain high growth rates until 2017. (Androniceanu, 2015,B; Popescu et al., 2016; Otrusanova, 2016)

In 2013, the World Bank adopted a new development strategy. (Dragulanescu & Popescu, 2015) According to the World Bank, the main objectives until 2030 (World Bank, 2016) are: (1) reducing extreme poverty by lowering the number of persons living on less than \$ 1.25 a day to 3% ; (2) Promoting common prosperity by stimulating revenue growth at a level of 40% for every country on the globe.

## **2. Romania and the World Bank**

Romania has been a member of The International Bank for Reconstruction and Development (IBRD) since 1972. The World Bank activity restarted in Romania in 1991, and has included public projects and programs financed by the International Bank for Reconstruction and Development via state loans, through the Ministry of Finance, but also private projects without state guarantees. (Popescu, et al. 2017; Androniceanu & Dragulanescu, 2012) Since 1991 to 2012, the International Bank for Reconstruction and Development financed operations in Romania amounting to 6.7 billion dollars. The package aimed to help the Romanian government reduce the fiscal deficit in a sustainable manner, improve the efficiency of public spending and strengthen the financial sector. (Becerra-Alonso, et al., 2016) The ultimate goal was to help Romania out of the economic and financial crisis on a stronger base.

## **3. Research results and discussion**

### **3.1 Presentation of the research problem**

In 2009, in the context of the global economic crisis, Romania needed to sign a partnership agreement with the World Bank of 1 billion Euros, extended by another billion in 2012, as part of a package totaling 19,95 billion, to which the European Union and the International Monetary Fund have also contributed. More precisely, in December 2008, Romania had a public debt of just 20% of GDP, and with this package external debt reached 35% of GDP in 2010, a level which remains the same until today. This package is the largest foreign loan in Romanian history. This research aims to answer two basic questions: (1) Have the loans from the World Bank contributed to the recovery from the crisis and the financial stability of Romania? (2) Is it necessary to continue contracting new loans from the World Bank?

### **3.2 Purpose and research objectives**

The purpose of this research is to determine the impact of the World Bank policies and strategies on the macroeconomic equilibrium of Romania in the context of the recent global financial crisis. Specific objectives: (1) Identify factors that influenced the decision of the Romanian Government to seek external financial assistance from the World Bank; (2) Identify how the World Bank has achieved its objectives and its core mission of reducing poverty and raising living standards in Romania; (3) Determine the influence of fiscal consolidation measures adopted by Romania on the economic development objectives and social inclusion; (4) Determine the main recommendations to improve the relationship between Romania and the World Bank.

### **3.3 Hypotheses and research variables**

For this research we have chosen three hypotheses highlighted by macroeconomic indicators. These hypotheses are the following: (1) The correlation between FDI and gross domestic product (GDP) can be a positive one; (2) GDP growth was influenced by foreign direct investment, private consumption and unemployment rate; (3) The implementation of the 2009-2013 Country Partnership Strategy, signed in 2009, influenced the economic development of Romania. Many projects funded by the World Bank were aiming at social inclusion and job creation, which is the very mission of the World Bank. (Laudan et al. 2016) The unemployment rate is therefore an important indicator to consider. Research variables: (1) The dependent



variable: GDP; (2) independent variables: foreign direct investment, unemployment rate, household consumption.

#### 4. Research methodology

Regarding the descriptive part, we used a method of quantitative research that is applicable to a phenomenon that can be expressed in quantitative terms, to explain the correlation between GDP, foreign direct investment, private consumption and unemployment, taking into account that the World Bank is an important creditor, together with the IMF, European Investment Bank and the European Commission. The method used is multiple linear regression, implemented through Microsoft Office Excel Program. The assumption is that the relationship between the variable  $y_i$  (evolution of real GDP) and the vector  $p$  depends on  $x_i$  (change foreign direct investment, household consumption and unemployment) is linear and determined by the following equations:

$$Y = \beta X + \alpha \quad (1)$$

$$Y_i = \beta_1 x_{i1} + \dots + \beta_p x_{ip} + \varepsilon_i = x_i^T \beta + \varepsilon_i, i = 1, n \quad (2)$$

where  $T$  means transposed so that  $x_i^T \beta$  is the dot product of vectors  $x_i$  and  $\beta$ . Often these  $n$  equations are arranged together and written as vector:

$$Y = \beta X + \varepsilon \quad (3)$$

We have undertaken a document analysis to test the third hypothesis, namely: The 2009-2013 Country Partnership Strategy signed in 2009, influenced the economic development of Romania. Given the comprehensiveness of development and the impact that the policies and strategies of the World Bank have generated, the use of qualitative method offers to our analysis a higher degree of variability, and thus the opportunity to understand and define the process of economic development, but also to identify elements of socio-economic change orientations in modern societies. To conduct this research we consulted various types of documents, including: official memos, country partnerships strategies, statistical data, WB progress reports on various countries, data from other researches and databases of public institutions and press information. (Popescu et al., 2016). The advantage provided by data from other research lies in the large number of cases and the wider area of coverage of such research (both nationally and internationally). As shown in Tab. 1, the biggest change in GDP occurred in 2008, when it grew by 8.5% over the previous year, followed immediately in the next year by a decline of 7.1% as a consequence the global financial and economic crisis. Years that followed brought successive increases of real GDP. Regarding public debt, the highest growth was recorded in 2013, while it fell by 2.37% in 2005. Looking at the unemployment rate, which was 7.8% in 2009, the highest level, while 2007 saw the lowest level in 10 years, i.e. 4%.

Table 1: Evolution of indicators selected for research

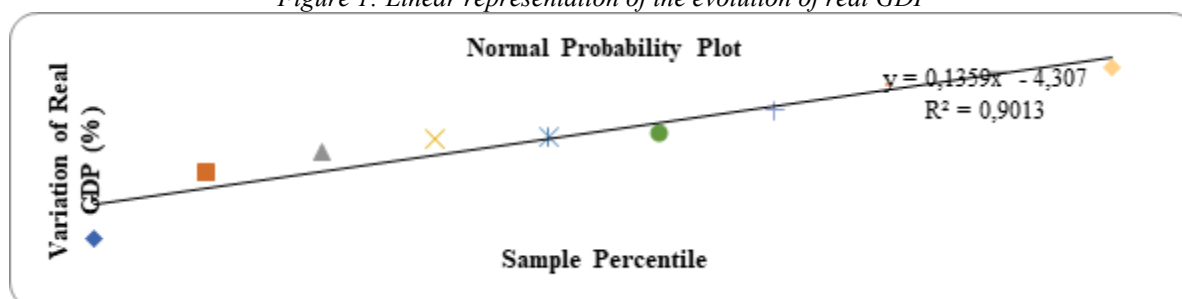
Year	Real GDP (%)	Household final consumption (%)	Foreign direct investment (%)	Unemployment rate (%)
2005	4.2	9.6	6.60	5.9
2006	7.9	11.6	66.80	5.2
2007	6.3	10.3	-9.01	4
2008	7/3	8.9	34.60	4.4
2009	-6.6	-9.1	-64.40	7.8
2010	-1.1	0.2	-35.00	7
2011	2.2	1.1	-20.02	5.2
2012	0.7	1.1	2.80	5.4

2013	1.9	0.3	56.30	5.7
2014	2.1	0.30	50.00	6.8

Source: World Bank, 2014.

Foreign direct investments in Romania have significantly diminished in the first years of crisis, as can be seen in the table above. Starting from the second half of 2011 we can see a slight rise, which, as the statistics show, continued in the first quarter of 2012. The analyses performed by specialists show that although the Romanian business environment expects a significant infusion capital, in reality it can be seen that the country's financial and fiscal policies are not attractive enough to stimulate an increase in foreign investment (Rajnoha & Lesníková, 2016). Another important aspect, often mentioned by representatives of foreign investors in Romania is political instability. This generates both discontinuity and insufficient coherence in economic policies and frequent changes in fiscal policies and, in particular business legislation. To interpret the results, it must be established that the statistical model is suitable. As shown in the table above, the probability that this model is correct is very high - 98.92%. We also can evaluate this through the value of R square, which means that 97.85% of the variation in real GDP is determined by independent variables: FDI, the net investment flow and the unemployment rate. At the same time, Adjusted R confirms that independent variables affect the dependent variable, in cases when new data would be added to observe the correlation. Regarding standard error, if it is "0" it means that the variables are in a regression trend. The confidence level considered for this model is 95%, which is standard for multiple linear regression model. Also, the standard error of the regression model is 0.77, which means that all elements are in a linear regression, as shown in Fig. 1.

Figure 1: Linear representation of the evolution of real GDP



Source: Authors

The table below shows ANOVA (analysis of variance), which represents the statistical models used to analyze differences between group means and their associated procedures. Regression degrees of freedom indicates the number of independent variables (factors) in the linear regression equation. The total degrees of freedom equals  $n - 1$ , where  $n$  is the sample size. In our research,  $n = 10$  data series, where from it results that  $df = 10 - 1 = 9$ . Total SS presents the sum of the squares of the differences between the values of  $y$  and  $\hat{y}$ . Each mean square (MS) is calculated by  $(SS) / (DF)$ . Tab. 2 contains the analysis of the variance of the indicators from regression.

Table 2: Analysis of variance (ANOVA)

Analysis of variance (ANOVA)	Indicators				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	165.5242	55.17475	91.33002	0.000021
Residual	6	3.62475	0.604125		
Total	9	169.149			

Source: Authors calculations

According to the table above, p-value (Significance F)=0.000021 <0.05, which means that the model chosen is significant, with a possible error of only 0.002%. Tab. 3 contains the results of the correlations between the main indicators selected for this research.

Table 3: Descriptive statistics of selected indicators

Indicators	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	6.4621218	2.20533	2.93022	0.0262794	1.06587	11.85838	1.06587	11.85838
Foreign direct investments (%)	0.027475	0.00719	3.82352	0.0087248	0.00989	0.04506	0.00989	0.04506
Household actual final consumption(%)	0.3989262	0.06918	5.76640	0.0011867	0.22965	0.56821	0.22965	0.56821
Unemployment rate (%)	-0.9728327	0.35122	-2.76986	0.0324284	-1.83224	-0.11343	-1.83224	-0.11343

Source: Authors calculations

In this table, the constant time is the indicator Intercept (GDP growth), which is equal to 6.46%. Taking each indicator in turn, we note that if foreign direct investment (FDI) would increase by 1%, GDP would increase by 0.02%. If current final consumption would increase by 1%, GDP would increase by 0.39% (this hypothesis, according to the regression model has an error of 0.8%). Also, if the unemployment rate would rise by 1%, GDP would fall by 0.97% (precision of this estimate is 96.8%, as shown on p-value = 0.032). The standard error is an estimate of standard deviation coefficient. It can be considered as a measure of the accuracy with which the regression coefficient is calculated. If a coefficient is large compared to the standard error, then it is likely statistically different from 0. T represents the coefficient divided by the standard error. Regarding the p-value, if 95% of the distribution t is closer to the average than the t-value, we conclude that we have a P value of 5%. Firm fiscal discipline and prudent economic management have helped Romania's recovery from recession. After decreases in 2009 and 2010, GDP rose by 2.3% in 2011 and 0.7% in 2012. The fiscal deficit was reduced from 4.8% in 2009 to 2.5% in 2012. The current account deficit decreased similarly, from \$ 23.7 billion in 2009 to \$ 6.3 billion in 2012 and while governmental projects balanced the current account deficit in 2013.

## 5. Conclusions

Our research demonstrates that the loans contracted by Romania from the World Bank, the International Monetary Fund and the European Union contributed to the implementation of major structural reforms in the period before the economic crisis. Our research also shows that borrowing from the International Bank for Reconstruction and Development in times of economic crisis, was necessary and has mitigated the effects of the crisis. Following the careful management of the crisis, thereafter, the economic and financial situation of Romania was stable. In December 2016, the Board of Directors of the World Bank approved a loan to Romania of 558.27 million dollars. This loan is intended to streamline public finances and reforms of certain institutions to support sustainable economic growth. Our research showed that the cooperation between Romania and the International Bank for Reconstruction and Development was an effective. Therefore, it is recommended that the WB loan be focused on instruments and areas not covered by EU financial resources.

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# THE SYSTEMATIC APPROACH TO OPTIMIZATION OF ACTIVITY OF THE TAX AUTHORITIES IN THE CONTEXT OF GLOBALIZATION

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**Abstract.** Globalization increases the requirements for the business environment, in particular, requirements for the effectiveness of tax authorities. We consider the optimization of the tax authorities from the point of view of system approach. The most important indicators of the effectiveness of the regional tax authority, which are considered as the performance criteria, include the amount of tax revenues, the difference between this amount and the cost of activities of the tax authority and the ratio of these values. It is possible to allocate following groups of the factors influencing the amount of tax revenue, which also are factors in the performance of regional tax authorities: 1) static and dynamic; 2) external and internal; 3) direct and indirect; 4) managed and unmanaged. These groups of factors are the basis for the formation of a uniform matrix of effectiveness of the regional tax authority, which include: 1) factors of efficiency of work; 2) factors of optimize work; 3) factors affecting the volume of tax revenues; 4) factors of efficiency of formation of tax revenues. We formed a matrix of factors of increase of efficiency of regional tax. We examined the impact of managing these factors on the performance of regional tax authorities.

**Keywords:** taxes, systematic approach, economy, globalization.

**JEL Classification:** E62, H26, C02.

## 1. Introduction

The globalization of the system of international economic relations is manifested, first of all, through the globalization of business: now a significant part of the income of the largest taxpayers is formed abroad. Countries - sources of income, naturally, seek to replenish their own budgets at the expense of foreign residents' tax payments. (Mishustin, 2016) Globalization in general and the globalization of business in particular entail the need to coordinate tax policies of various states. Globalization opens new opportunities for attracting external sources of financing for the state: the opportunities for obtaining external loans to finance public spending have grown significantly. (Vavrova & Bikar, 2016) There is an objective need to improve the efficiency of the tax authorities, which can be implemented through a system approach to optimizing their activities. So it is necessary to identify factors that affect the efficiency of the activities of tax authorities.

## 2. Factors of effectiveness of tax authorities in globalization context

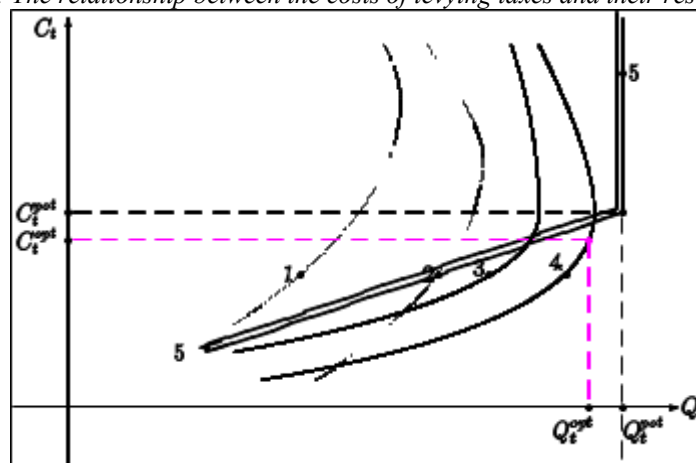
**Thesis 1.** *The volume of tax revenues is one of the indicators of the effectiveness of the regional tax authority and vice versa: one of the main criteria for the effectiveness of the regional tax authority is the volume of tax revenues to the regional budget. In other words, we are talking about the ratio of the volume of tax revenues to the regional budget to the costs of the functioning of the regional tax authority.*

As the main factors influencing the volume of tax revenues to the regional budget, it is possible to single out: change in the quantitative and qualitative composition of taxpayers, branch structure of taxpayers etc. (Diller & Lorenz, 2016) The most significant of these factors are the specialization and level of industrial development of the region, as well as the dynamics of its socio-economic development. These indicators, basically, determine the dynamics of tax payments, their structure in a given territory. An important factor is the legislative base. (Casal & et al., 2016) An important factor determining the amount of tax revenue is the quality of the control work of the regional tax authority, as the measures taken in the region to verify the correctness of the calculation, completeness and timeliness of payment of tax payments to the regional budget. (Levaggi & Menoncin, 2016)

**Thesis 2.** *One of the basic indicators of the effectiveness of the regional tax authority, which assesses the optimization of the cost of collecting taxes, is the difference between the volume of tax revenue and the cost of obtaining them.*

Within the framework of this article, under the optimization of the costs of levying taxes and fees, the authors understand the definition of such a size of these costs, in which the difference between the receipts to the budgets from the payment of taxes and fees (hereinafter - tax revenues) and the costs of obtaining them, that is, "net income" will be maximum. Graphical representation of the costs of levying taxes and their results is shown in Figure 1.

Figure 1: The relationship between the costs of levying taxes and their results, rubles



Source: Anisimov & Shirpuzhev, (2016).

Used designations:  $Q_t$  - tax revenues (rubles);  $Q_t^{opt}$  - maximum tax revenues at the optimal cost of levying taxes and fees (rubles);  $Q_t^{pot}$  - tax potential of the territory (rubles);  $C_t$  - the cost of levying taxes and fees (rubles);  $C_t^{pot}$  - the amount of costs for levying taxes and fees when it reaches  $Q_t^{pot}$  (rub.);  $C_t^{opt}$  - the optimal amount of costs for levying taxes and fees or the optimal costs (rubles); 1 - "Cost-Income" line actual, 1st option; 2 - the line "Expenses-Income" is the actual, the second option; 3 - the "Cost-Income" line is the actual, the third option; 4 - the "Cost-

Income" line is the actual,  $n$ -th option (in the figure it is shown as the optimal one - note of the author); 5 - the line "Expenses-Income" is formal (abstract).

**Thesis 3.** *Factors of efficiency of formation of tax incomes simultaneously are the factors influencing volume of tax receipts.*

The effectiveness of the formation of tax revenues is the most important characteristic of the quality of the tax system in the region in terms of the ratio of costs and performance of the tax system in the region. Depending on what costs and what results are taken into account, we can talk about the economic, social, socio-economic, organizational and other effectiveness of the formation of tax revenues of the region. Accordingly, under the factors of effectiveness of the formation of tax revenues within the framework of this article, the authors mean specific conditions or impacts (Li, 2016) in which such revenues are formed, which have a significant impact on the achievement of the set purposes (Hashimzade & et al., 2016), that is, the formation of tax revenues. Proceeding from the fact that the main result of the functioning of the regional tax system is the volume of tax revenues to the regional budget, we can argue that the factors of effectiveness of the formation of tax revenues are simultaneously factors that influence the volume of tax revenues.

**Thesis 4.** *There are various factors in the effectiveness of the formation of tax revenues, they are also factors that affect the amount of tax revenue.*

It is possible to identify several main groups of factors in the effectiveness of the formation of tax revenues of the regional budget, the entire set of factors can be represented in the form of several groups: external and internal, objective and subjective, managed and unmanaged, direct and indirect. This approach is subject to further detail: economic, social, organizational, legal, direct, indirect and a number of other factors should be highlighted. (Morar, 2015) It is clear that there are no separate, independent from each other factors: they can be external uncontrollable objective economic; internal managed subjective organizational; external controlled subjective social and so on.

Previously, the authors noted that as the main factors that affect the amount of tax revenues in the regional budget, we can distinguish: a change in the quantitative and qualitative composition of taxpayers; branch structure of taxpayers; specialization and level of industrial development of the region; dynamics of social and economic development of the region; the legislative framework; quality control work of the regional tax authority. These factors reflect the specialization of the region, its tax potential and the dynamics of social and economic development, the state of control and explanatory work of the regional tax authority, the state and quality of regional tax legislation, thus being simultaneously factors in the effectiveness of the formation of regional tax revenues.

**Thesis 5.** *Factors influencing the volume of tax revenues are simultaneously factors in the effectiveness of the work of the regional tax authority (but some components of efficiency may be invariant with respect to some factors). If the factor does not affect any component, then it means incompleteness of the system of performance indicators.*

Previously, the authors identified as the main factors affecting the volume of tax revenues in the regional budget: a change in the quantitative and qualitative composition of taxpayers; branch structure of taxpayers; specialization and level of industrial development of the region; dynamics of social and economic development of the region; legislative framework; quality control work of the regional tax authority. Naturally, the volume of tax revenues directly depends on other factors, including - affecting the magnitude of the tax potential of the region.



The problem of selecting the criteria by which to evaluate the work of tax authorities remains open, although many relevant methods, both in terms of information base and objectives, have been developed and proposed. (Anisimov & Shirpuzhev, 2016) The authors present in the table 1 the current methodology for assessing the work of territorial units of the Federal Tax Service of Russia.

Table 1: The current methodology for assessing the work of territorial units of the Federal Tax Service of Russia

Criteria groups			
According to the overall assessment of the effectiveness of the control work	According to the evaluation of the organization's performance and the conduct of desk audits	According to the evaluation of the organization's performance and the conduct of on-site inspections	In assessing the work with organizations that do not report
The proportion of additional accrued payments based on the results of the control work in the total amount of accrued payments on tax declarations (calculations) for the reporting period, etc.	The proportion of additional accrued payments for desk audits in the total amount of additional accrued payments for field and desk inspections, etc.	Specific weight of effective on-site inspections, during which violations were detected, in their total number for the reporting period; the amount of additionally charged payments, etc.	The share of organizations that do not report or report "zero" in the total number of organizations that are registered in the reporting period, etc.

Source: Anisimov & Melnikov, (2017).

The authors consider it necessary to note that the effectiveness of the activities of tax authorities in general and of a particular tax authority in particular is determined by two main points: 1) the receipt of tax payments to the budget, the amount of which is as close as possible to that which the tax potential of the given territory (state, region, municipal formation); 2) the absence of violations (intentional and unintentional) of tax legislation, both on the part of taxpayers, and on the part of tax authorities; strict observance of the current tax legislation. (Kasper & et al., 2015) Thus, it is quite obvious that the factors influencing the volume of tax revenues are related to the factors of the efficiency of the regional tax authority. At the same time, some components of efficiency may be invariant with respect to some factors. Note that if the factor does not affect any component, it means incompleteness of the system of performance indicators.

**Thesis 6.** *The following types (groups) of the indicated factors can be distinguished: static (constant) and dynamic (variables); external and internal.*

Each group of factors, in turn, includes several subgroups, which is characterized by more individual characteristics - examples of factors included in this subgroup. Table 2 shows the author's classification of factors affecting the effectiveness of the formation of regional tax revenues and, accordingly, the volume of tax revenues to the regional budget.

Table 2: Conceptual classification of factors affecting the effectiveness of the formation of regional tax revenues

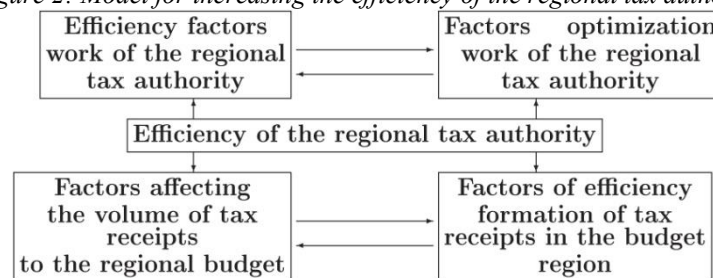
Groups of factors	Subgroup of factors	Examples of factors
Static (permanent)	Territorial	location of the region; area of the region, etc.
	Other static factors	form of the government, etc.
Dynamic (variable)	Administrative factors	regional tax administration, etc.
	Other dynamic factors	interregional production cooperation; international production cooperation, etc.
External	foreign policy	the external political situation; regional state policy, etc.

	foreign economic	external economic situation; regional state economic policy, etc.
	other external factors	the state tax policy, etc.
Internal	internal policy	regional tax policy; regional investment policy, etc.
	Internal economic	regional economic policy; the state of the regional shadow economy, etc.
	other internal factors	the ecological situation in the region; regional tax base, etc.
Managed	organizational	frequency of tax audits; organization of work with taxpayers; level of tax collection, etc.
	legal (regional)	granting of privileges on regional taxes; setting rates for regional taxes, etc.
	other managed factors	investment and innovation policies; tax potential of the region, etc.
Unmanaged	economic	industrial specialization of the region, etc.
	legal (federal)	a list of regional taxes; the maximum amount of rates for regional taxes, etc.
	natural and climatic and other uncontrollable factors	weather conditions in the region; the general political situation in the country, etc.
Direct	resource	the number of taxpayers; number of objects of taxation, etc.
	Other direct factors	the number of large taxpayers, etc.
Indirect	political international	international sanctions, etc.
	other indirect factors	the level of tax culture, etc.

Source: Kolesnikov, (2010), Filatova, (2013).

**Thesis 7.** The listed types (groups) of factors are the basis for the formation of a model of the efficiency of the regional tax authority, see table 3, which includes: 1) factors of the effectiveness of the regional tax authority; 2) factors of optimization of the work of the regional tax authority; 3) factors affecting the amount of tax revenue to the regional budget; 4) factors of efficiency of formation of tax revenues in the regional budget (Fig. 2).

Figure 2: Model for increasing the efficiency of the regional tax authority



Source: own processing

The presented model shows the interaction and interrelation between the factors of the effectiveness of the work of the regional tax authority, factors of optimization of the work of the regional tax authority, factors influencing the volume of tax revenues in the regional budget and the factors of effectiveness of the formation of tax revenues in the regional budget. The impact on any element of the matrix inevitably entails an impact on its other elements, which should ultimately lead to an increase in the efficiency of the regional tax authority.

**Thesis 8.** Static (further - St) and dynamic (further - Dy), external (Ex) and internal (In), direct (Di) and indirect (InDi), controlled (Co) and uncontrollable (UnCo) factors do not exist

*separately from each other: they are more or less interconnected and interact, forming various combinations (combinations): "St-Ex-InDi-Co" and so on.*

There may be a question about the adequacy of possible combinations of factors. The authors hold the following position: in this or that situation, the significance of certain factors, as well as their possible combinations, is manifested to a greater or lesser degree. At the same time, one should not forget that there are no absolutely controllable and absolutely unmanageable factors, for example; in a certain situation, external factors become internal, dynamic static and vice versa; direct - indirect. Thus, as indicated by the authors above, any such dichotomous partition is not exact - there are always options.

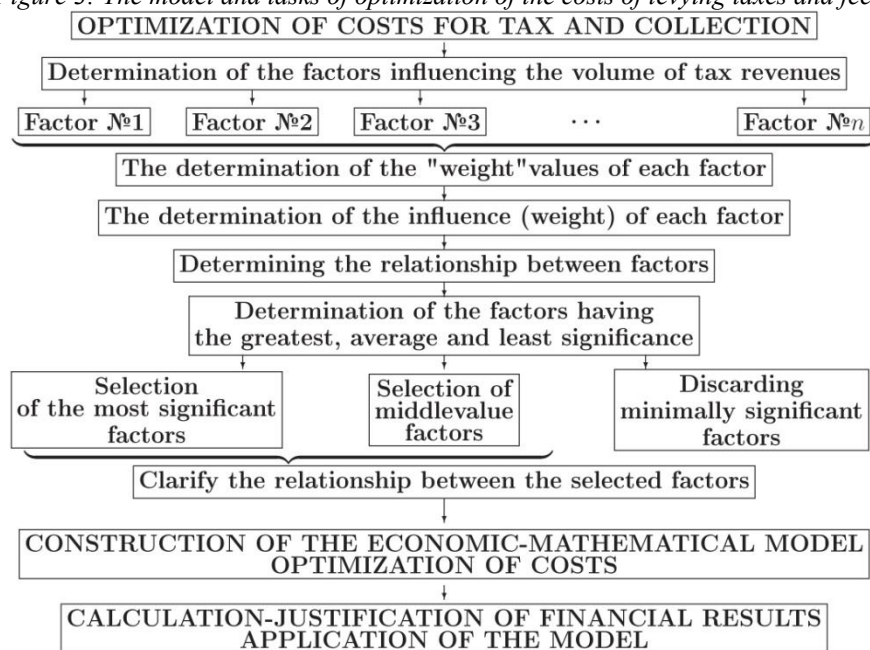
**Thesis 9.** *There are practically no absolutely controllable and absolutely unmanageable factors; in a certain situation, external factors become internal, dynamic static and vice versa; direct - indirect. Thus, each of these dichotomous partitions, generally speaking, is not exact, there are intermediate (for example, transitional) variants.*

For example, such an external factor as a "regional state policy" when providing regions with much greater "tax independence" significantly reduces their "external impact" and becomes, in practice, an "internal affair" of the region. On the contrary, with a significant reduction in "tax independence", when literally every decision must be coordinated with federal authorities, this factor becomes more external than internal.

**Thesis 10.** *Impact on groups of factors or on individual factors can improve or worsen the efficiency of the regional tax authority, optimize or deoptimize the costs and performance of the regional tax authority (increase or decrease the difference between the volume of tax revenues and the costs of the regional tax authority to receive them).*

Management by influencing groups or subgroups of factors is undoubtedly more complex than affecting individual factors (Fack & Landais, 2016).

Figure 3: The model and tasks of optimization of the costs of levying taxes and fees.



Source: own processing

As can be seen from Figure 3, the final result (task) of optimization of the costs of levying taxes and fees is the calculation-justification of the financial results of the application of the developed economic-mathematical model of such optimization. At the same time, it is necessary to take into account the costs of implementing this model in the practice of the regional tax authority, which undoubtedly entails additional costs, the calculation and justification of which also requires a separate scientific study. (Melnikov & et al., 2016)

### 3. Conclusion

The process of globalization has an impact on the tax system and the tax policy of any state. (Karen, 2016; Jakubek & et al., 2016) Several groups of external and internal factors underlying the development of any state are objectively reflected in this sphere: political, economic, social, demographic, information, geographic, other, including factors of the international tax environment. The globalization of the system of international economic, political, social, scientific, technical, information and other ties is manifested, first of all, through the globalization of business. The process of globalization is manifested in the tax sphere through an increase in the external transparency of the national tax system (Ellul & et al., 2016). The process of globalization entails the need to increase the effectiveness of the tax authorities, which can be implemented through a systemic approach and a model for optimizing their activities.

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## GLOBALIZATION AND ITS IMPACT ON THE STANDARD OF LIVINT IN THE SR

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**Abstract.** The impact of globalization on the quality of life remains an up-to-date problem, although term of the quality of life is extremely wide and is cause of the considerable problems for researchers. For that reason, we were also forced to reduce the issue and concentrate only on one part of it, which is the standard of living. Up to now, there are theoretical dilemmas in identifying of the quality of life and the standard of living; even some authors do not see differences between them. From our perspective, the standard of living is one of the subcategories of the quality of life. In the methodological field, we can find a rich elaboration of methods of measurement, of both: globalization and the quality of life, respectively of the standard of living. There exist the different forms of indexes that allow quantify not only the situation within a country but also to compare with the situation of other countries. In our paper, we focus, besides theory and methodology, on an empirical analysis of the relations between globalization and the standard of living in the Slovak Republic. At the same time, we focus on a certain field of the standard of living, and that on consumption. Through the data of 15-years period, we deduce not only on the global manifestations of globalization and on the standard of living, but also on their interconnection, even in their individual components, which enriches previous research.

**Keywords:** globalization, quality of life, standard of living, consumption, household expenditure

**JEL Classification:** A14, D10, D12

### 1. Introduction

Globalization is a persistent problem, which on the one hand, is very positive and, on the other hand, brings many complicated problems. (Domonkos & Osrihoň, 2015; OECD, 2005; Thomassen et al., 2017) Despite its topicality, it is a very vague phenomenon in terms of research, therefore is very difficult to select its indicators and separate them from integration processes into the EU or from other processes that are accompanying it. (Morvay, 2013) We see a similar problem in identifying the quality of life, which also presents the complicated complex of the various indicators. Therefore, both phenomena are significantly reduced and researchers are only focused on the selected issues.

Examining the impact of globalization on the standard of living is a relatively explored area. For this reason, **the main goal** of our paper is to assess not only the evolution of globalization but also dynamics of the saturation process of needs of the Slovak population in the 15-year period, as well as to identify the interconnectedness of both phenomena, which our own investigation extends at present.

## 2. Theoretical background

Globalization means interconnection of previously separated parts of the world, the development of information technologies and their mass availability. The goal of this process is to encompass the whole world and to create the same conditions, as are in all countries with a developed democratic system. Therefore, the world is going through a trade exchange between countries to one economy. One economy, one market - this is the closest natural stage in the economic history of civilization. (Naisbitt & Aburdene, 2000)

This fact is a new phenomenon of the 20th century, which is addressed by researchers in terms of the different scientific disciplines, not only in terms of economics, but also in politics, culture, environment, psychology, social psychology, and so on. (Morvay et al., 2013; Jeníček, 2002) Despite all the effort, its identification remains inconsistent and for its global and worldwide character also stays on a highly abstract level.

### 2.1 Dilemmas of the standard of living

Some authors do not perceive differences between the quality of life and the standard of living. They think, they have the same content. However, after their deeper study, we have to say, that the standard of living, such as category, have begun to be used sooner than the quality of life. Already in 1950 year (Steckel, 1995), where various problems originated in quantifying and assessing of the minimum food, clothing, shelter, water and hygiene that would be a prerequisite for good health. J. K. Galbraith, who pointed out fact that it cannot be consider only as a measure of the material satisfaction, because the unilateral orientation of society to quantity will achieve decreasing in the quality of life itself. (Galbraith, 2001)

Differences between two categories we can find above all in their structural components. We support F. Hronský's view that the standard of living must be perceived through three basic components, which are needs, consumption and living (social) conditions. (Hronský, 1981) While the quality of life is being created, according to I. Laluha, by needs, by the living conditions, by the social environment, by the value orientations and by the life activities (Antalová, et.al., 2010). Based on the above-mentioned structural elements of both terms, we can state that the standard of living is one of the sub-categories of the quality of life. Thus, this phenomenon is narrower in its content and is oriented primarily towards process of the needs saturation. (Attanasio & Pistaferri, 2016)

It is needed to pay attention to fact that between the standard of living and the quality of life exist very strong interconnection, these relations are not unambiguous and direct. Because the same standard of living may bring quite different situation in the quality of life.

The standard of living has initially been considered as a purely economic category; later, need for new approaches to measuring of the economic development has been influenced its quantification, and today is perceiving as the socio-economic category that integrates knowledge of philosophy, sociology, psychology, medicine, architecture and other disciplines.

At present, we can find in the literature a broad framework of its identification, but not clear in relation to the quality of life itself.

A. Sen, in his work *The Standard of Living* in 1998 year, states, that this phenomenon represents different things and areas and their selection is depending from aspect and approach to it (Sen, 1998) from side of researcher. From an economic aspect, we can consider it as the global equilibrium. A similar approach he applied to the subjective dimension of the standard of living, which can be quantified from the aspect of wellbeing and wealth assessment.

The American author, M. Moskowitz, approaches to the standard of living as "the degree of satisfaction living needs of people and a set of conditions in which these needs are met" (Moskowitz, 2004). So in a similar way as Hronský, who used this approach already in 1981 year, until Moskowitz in 2004 year.

In our research, we will come out from perception of the standard of living by F. Hronský, who for its attribute considered the saturation process of needs, consisting of three basic components: from need, consumption and living (social) conditions. He pointed out their important interconnection, but for the decisive criterion of assessing consumption, he considered utility, it means ability to satisfy the need. He defined the standard of living as "the degree of identified and societally recognized needs of population of a particular state or a suitably defined part of population, the degree of satisfaction of these needs and the basic conditions created by society for purposeful course of the saturation process." (Hronský, 1981) Similar access to solving of this theoretical problem we can find in works of other authors, for instance Houle (2017), Azudová (2005), König & Dovál'ová (2016), Kaščáková (2011), Pitoňáková (2015).

He emphasized that consumption cannot be assessed separately without needs and on the contrary the needs without options of their satisfaction. In general, there is a certain state, that there exists a certain difference between the degree of the knowledge of needs and the degree of their satisfaction. According to him, the knowledge of needs is the starting point for the quantitative delimitation of the standard of living in which he emphasizes the fact that the process of continuous growth of needs there exist.

### **3. Methodological background**

In examining of globalization, we will start from quantification based on the KOF index, which is created by A. Dreher. The index was first published in 2002 year, later edited in 2007 (Dreher et al., 2008) and latest in 2017 year. It consists from three major partial indexes, such as the economic globalization, the social globalization and the political globalization.

From aspect of quantification of the standard of living, we consider the household accounts as typical indicators. The Statistical Office of the Slovak Republic adapted its structure to the requirements of EUROSTAT and other international organizations with using the COICOP classification - Classification of Individual Consumption by Purpose.

In our analysis, we focus our investigation only on a fraction of the standard of living, to the level of growth and structure of the household consumption.

### **4. Findings and discussion**

From the point of view of achieving the goal of our paper, the empirical analysis will be based on the following:

1. Globalization in the SR over the period is getting an increasing tendency in all its structural components (economic, social, and political).
2. The household expenditures in the Slovak Republic for the same reference period also develop in ascending order, but not in all structural components.
3. There exists the strong interconnection between globalization and consumption globally, but not in the structural components of both phenomena.

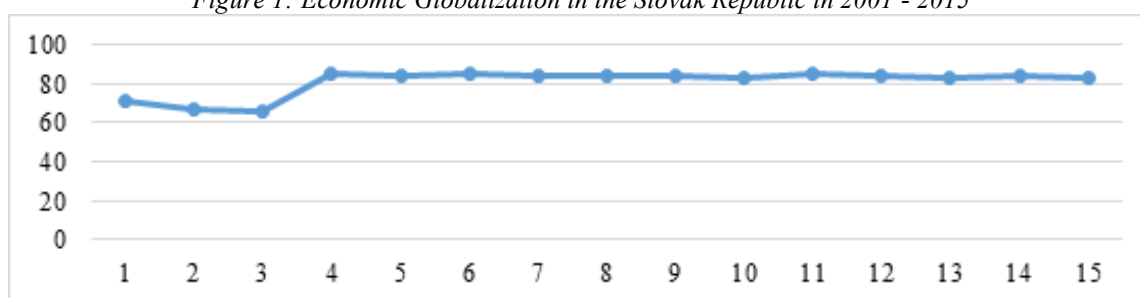


#### 4.1 Globalization and its manifestations in the Slovak Republic

About globalization in the Slovak Republic in the period 2001 – 2015 years, we can say, that its manifestation slowed after 2001 year, as was reflected in the years 2002 - 2003. In 2004, it picked up the increasing tendency and reached the highest value of KOF index - 85.55 for the reference period. For the following year, the process slowed and had form of variableness from one year to the next by 2015 in an average value of KOF index - 84.2.

Figure 1, 2, 3 show the economic, social and political dimensions of globalization. We see that they are different. The economic dimension is the closest to the total globalization, is reflected also its decrease in 2002 and 2003 year, and situation, in which direction to the present have been stagnant.

Figure 1: Economic Globalization in the Slovak Republic in 2001 - 2015

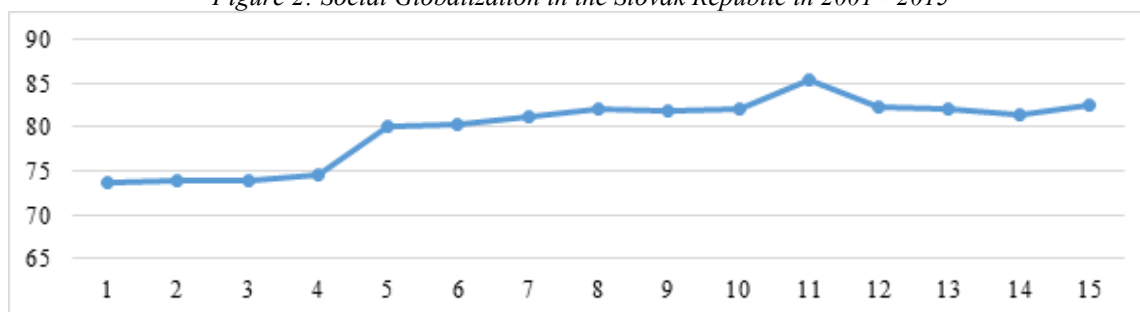


Source: <http://globalization.kof.ethz.ch>

The social globalization has evolved in a different way. While it was stagnating between 2001 and 2004 year, the value of index increased about 5.67 points in 2005 year. In 2005-2010, it increased very slightly. Its top the Slovak Republic reached in 2011, when the index value was 85.41. In the following year, the index lost about 3.08 points. Until 2014, the process has become more and more stagnant. Until 2015, there was again a "recovery" with an index value of 82.63.

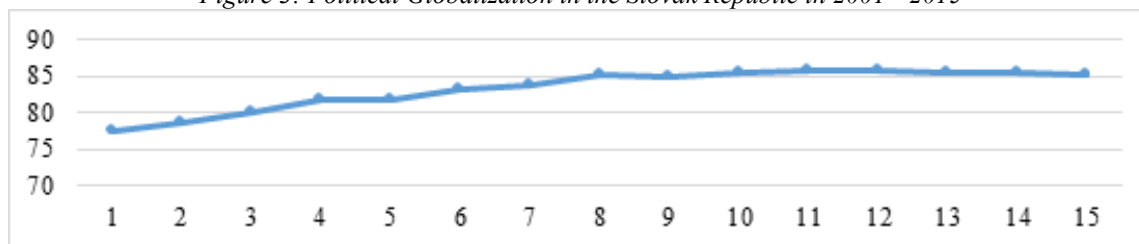
The political dimension of globalization also has its own specificities. In the period 2001-2011 years, during the ten-year period, is slightly increasing. In this process, Slovakia achieved an index value of 77.37 in 2001 year and an index value of 85.89 in 2011 year, what presented an increase of 8.52 index points. From 2011 to 2015, the process of the political globalization has begun to stagnate, in 2011, we reached an index value of 85.89 and in 2015, and the index was only 85.22. The process of political globalization has been on the downward trend about 0.67 index point.

Figure 2: Social Globalization in the Slovak Republic in 2001 - 2015



Source: <http://globalization.kof.ethz.ch>

Figure 3: Political Globalization in the Slovak Republic in 2001 - 2015



Source: <http://globalization.kof.ethz.ch>

In the research thesis, we assumed, that globalization in the SR over the investigated period gains an increasing tendency in all its structural components (economic, social, political) that we can confirm over the period under review. When we compare the total globalization in 2001 and 2015 years, it increased about 12.42 index points. The economic globalization has risen about 12.09 points in period under review, the social globalization about 8.96 index points and the political globalization about 7.85 index points. We also find a specific manifestation of process within the individual dimensions of globalization, of which the greatest progress is recorded in the politic globalization and the lowest in the economic dimension.

#### 4.2 Consumption structure and its evolution

The extensive table documents the dynamics of expenditures of Slovak households during the monitored period 2001 – 2014 years. In 2001 - 2008 there was a gradual increase of expenditure per person. 2009 year was a breakthrough, because the spending was decreased about 18.07 EUR, compared to the previous year, which represents a significant amount per person in one household. In the next year (2010), we can see a very slight increase about 1.14 EUR in 2011 about 13.04 EUR than in the previous year. We are experiencing its decline again in 2013 year, compared to the previous year about 2.03 EUR per person. The year 2015, even if we do not indicate in table, was the most favorable for consumers, the total expenditures per person was 32.82 EUR.

Spending on **food and non-alcoholic beverages** include all expenses associated with the purchase of food and non-alcoholic beverages in the trading network. Watching them we conclude, that they were quite high in 2001 (24.38 %) and in 2002 (24.14 %) and their top was in 2004 year (24.7 %). Later, they were gradually decreasing until 2012 year and in 2013 year, they increased again. The lowest spending on food and non-alcoholic beverages in the reference period was in 2015 year (19 %). For comparison, we report that the EU average for food expenditure is about 13 %, thus about 6 % lower than ours. Table 2 presents annual changes in food and non-alcoholic beverage spending over a 10-year period.

The expenditures of housing, water, electricity, gas and other fuels are another important for everyday life. Since 2001 year, they have gradually risen and peaked in 2015 year, when they presented 66.85 EUR per person. In their more detailed examination through the percentage portion to the total expenditures, we came to conclusion that the largest proportion of total expenditures amounted in 2004 year, and that until 22.4 %, what we can compare to the expenditure proportion of food and non-alcoholic beverages.

On basis of facts, we can state during the investigated period 2001 – 2015 years it came to gradual, but not direct increasing of expenditures until 2012 year, from which they were reduced about 0.9 % in 2015 year. Our assumption that expenditures will develop upwards has been partially confirmed. The dynamics of changes in the individual items in expenditures was manifested by two tendencies. An increasing trend we recorded in expenditure of food and non-

alcoholic beverages, on alcoholic beverages and tobacco, on health, post and telecommunications, on recreation and culture, as well as on expenditure on hotels, cafes, restaurants and expenditures recorded in other net expenditure. An alternating trend was recorded for expenditures of clothing and footwear, housing, water, electricity, gas and other fuels, furniture, housing and apartment maintenance, transport, education and spending on miscellaneous goods and services. Our hypothesis: "Household expenditures in the Slovak Republic, for the same reference period, are also developing in ascending order, but not in all structural components", we have also confirmed.

#### **4.3 Relations between globalization and standard of living**

The relationship between globalization and the standard of living was monitored by the correlation coefficient. We have verified the aforementioned assumption that there is a strong interdependence between globalization and consumption, but not in the structural components of individual phenomena.

By analysis, we came to the following general conclusions:

1. Process of globalization and the household consumption are interdependent; this relationship has been manifested by varying degrees of intensity in the individual dimensions of globalization as well as in the individual expenditure items of households.
2. We note the most intense relationship between consumption and the political dimension of globalization, slightly smaller than with the social globalization. What was surprising for us, the least intensive bond exists between household consumption and the economic dimension of globalization.

In verifying the correlation between the total globalization and its individual dimensions and the global expenditures of the Slovak households, we came to the conclusion that total globalization and the total household expenditures showed only moderate intensity - a correlation coefficient of 0.69866, connection between the economic globalization and expenditures was even lower (0.69467). However, the highest correlation was recorded between the total consumption and the political dimension of globalization (0.94854). A slightly less intense relationship was manifested between the social globalization and consumption (0.91267).

Food and non-alcoholic beverages are the most important part of consumption, which also form the basis for identification of the standard of living. These have been strongly linked to globalization (0.75885). The least intensive interconnection was found between expenditures of food and non-alcoholic beverages and the economic globalization (0.75852), more intensive between this type of expenditures and the social globalization (0.89295) and a very intense relationship with the political globalization (0.96012).

Thus, the strongest links have been established between globalization and household expenditures on food and non-alcoholic beverages, but even more intensive between globalization and expenditures of housing, water, electricity, gas and other fuels (0.85585) and healthcare (0.78333), and of alcoholic beverages and tobacco (0.67671). We found a weak connection between globalization and expenditures of households for clothing and footwear (-0.07109), expenditure for furniture, housing and apartment maintenance (0.29400), education (0.39846), hotel, cafes, restaurants expenditures (0.36908).

## 5. Conclusion

In our paper, we pointed out connections between processes of globalization and its individual dimensions (economic, social, and political) and the standard of living examined by consumption. Through the correlation coefficient, the assumed relations in the structural components of both phenomena, in the basic framework, were confirmed. We can say that there are strong interconnections between two phenomena, but this relation is not valid in all structural components of consumption (clothing and footwear, furniture, furnishings and apartment maintenance, education, hotels, café restaurants and various goods and services).

Deeper studies in this area require the expansion of the database, which we used for creating this paper as well as to sort out some dilemmas in theoretical as well as methodological fields, especially in the phenomenon of globalization where are not precisely identified processes that are part of it. In the area of standard of living, it is also important to examine its subjective dimension, which also requires the construction of the fixed indicators. The deepening of knowledge in these fields are becoming a challenge for us in the future.

## Acknowledgment

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# INVESTING IN GLOBAL FINANCIAL MARKETS, UTILIZING THE HALLOWEEN EFFECT: THE CASE OF THE EXCHANGE TRADED FUNDS

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**Abstract.** The birth and expansion of the exchange traded funds (ETFs) is one of the best visible results of globalisation on international financial markets. Thanks to the ETFs, various kinds of assets from different countries can be easily traded on the major stock exchanges. The growing popularity of the ETFs is caused also by their ability to provide a cost-efficient portfolio diversification. As the ETFs should track the performance of the assets contained in their portfolios, it is possible to assume that their stock prices are affected by similar factors, the calendar anomalies included. One of the most famous calendar anomalies is the Halloween effect. Asset markets affected by the Halloween effect tend to do significantly better during the winter half (November – April) than during the summer half of year (May – October). The globalisation and internationalisation of the financial markets helped to spread the calendar anomalies, the Halloween effect included, around the World. This paper is aimed on the investigation of the Halloween effect on the ETFs market and on the evaluation of ability of simple Halloween effect-based investment strategies to generate abnormal returns. Price series of several ETFs with history longer than 20 years that are focused on major stock markets were analysed. The data show that a Halloween effect-based investment strategy is able to beat the buy & hold investment strategy when applied on any of the analysed ETFs.

**Keywords:** ETF, Halloween effect, investment strategy, calendar anomaly

**JEL Classification:** G11, G12, G14, G15

## 1. Introduction

Globalisation has been one of the most visible features of the global economy and the global financial markets over the recent decades. According to Helleiner (1995), the process of globalisation has been supported not only by the technological progress and free market forces, but also by the politicians. Various aspects of globalisation have been studied over the years. (Wang et al., 2008; Heckova et al., 2016; Mamedov et al., 2016; Mikalauskiene et al., 2016; Bojnec & Ferto, 2016, 2017) Globalization has helped to create some new problems and to deepen some of the older ones. According to Azzimonti, Francisco and Quadrini (2014), the liberalization and international integration of financial markets enables the governments to behave less responsively and maintain significantly higher levels of indebtedness. According to Lane (2012), the globalisation of financial markets helped to create the global financial crisis of 2008. Lane claims that globalization fuelled the excessive growth in credit markets and it also fuelled the asymmetries in credit growth and external positions across countries. According to Basco (2014), asset price bubbles can't arise in a financially developed country in autarky,

however, due to the globalization, bubbles are more likely also in financially developed countries.

On the other hand, the globalization of international financial markets has also several positive aspects for retail, as well as institutional investors. The investors are able to allocate their investments more efficiently, by investing in various assets in various countries around the World. Moreover, the current level of information technologies enables them to react on the most actual developments in distant parts of the World very quickly. One of the financial instruments that was invented in recent decades are the exchange traded funds (ETFs). ETFs enable investors to invest in various assets (usually stocks or commodities) via major stock exchanges. ETFs are a significant manifestation of globalisation, as their portfolio doesn't have to include assets traded on the particular exchange. It means that for example via the „iShares MSCI Chile Capped ETF”, that is listed on the New York Stock Exchange (NYSE), an investor can invest in a basket of Chilean companies that are listed on the stock exchange in Santiago de Chile. Technically, the investor invests in stocks of companies listed on the stock exchange in Chile, via the stock exchange in New York. It can be a huge advantage for an investor who wants to invest in the Chilean assets, as the vast majority of the Chilean companies are not dually listed in Chile and on a major foreign stock exchange and trading via the Chilean stock exchange (as well as the other stock exchanges of only local importance) can be pretty complicated and expensive for the foreign investors.

Due to the globalization and informatization, not only the important news have the potential to affect the developments on the global financial markets very quickly. As a result, also the financial markets of a local importance often react on events that occurred in a distant part of the planet very quickly. However, as numerous researches show, not only the impact of the news events has got a global importance. Also the calendar anomalies that were originally discovered in some of the developed markets can be found in various asset markets around the World today. Some of these anomalies are strong enough to be used as a cornerstone of successful investment strategies that are able to generate abnormal returns.

One of the most famous calendar anomalies is the Halloween effect. The Halloween effect is based on the observation that stock prices tend to perform notably better during the winter half of the year that lasts from November to April, than during the summer half of the year lasting from May to October. This phenomenon was originally spotted on the British stock market several centuries ago, when the professional traders discovered that the stock market tends to underperform during the summer months. This observation has led to the emergence of the saying “sell in May and go away”, also known as “sell in May and come back after Halloween” which later led to the name “Halloween effect”. According to Bouman and Jacobsen (2002), on the British stock market, this calendar anomaly can be tracked back to 1694. Many other studies compared the presence of the Halloween effect on stock markets around the World. Bouman & Jacobsen (2002) analysed stock markets of 37 countries, discovering the Halloween effect on 35 out of the 37 markets. Moreover, in 20 out of the 35 cases, the difference between the winter period and summer period returns was statistically significant. Swagerman and Novakovic (2010) discovered the Halloween effect on 29 out of 31 investigated stock markets, with 16 statistically significant cases. They also concluded that the Halloween effect tends to be stronger on developed than on developing stock markets. Lean (2011) confirmed the presence of the Halloween effect on the Malaysian, Chinese, Indian, Japanese and Singapore stock markets. Arendas & Chovancova (2016) concluded that the Halloween effect affects also the Central and Eastern European stock markets. Moreover,

Arendas (2017a, 2017b) confirmed the presence of the Halloween effect also on commodity and bond markets.

Although the reasons of the existence of the Halloween effect are still unknown (there are only a handful of theories, none of which is generally accepted), several studies (Haggard & Witte, 2010; Andrade et al., 2013; Dichtl & Drobetz, 2014) concluded that this calendar anomaly can be successfully exploited as a part of investment strategies. However, the authors used only the common stock indices to determine whether the Halloween effect-based strategies would be successful. This may cause some problems in the real life, as it is impossible to invest directly into a stock index. Investors have to invest in some financial derivatives that use the particular stock index as an underlying asset, or into some ETFs or mutual funds that track the particular stock index. In all of the cases, the price development of the financial instrument differs from the price development of the underlying asset. Although the difference is usually relatively small, it may accumulate into a quite notable extent over long time periods. The aim of this paper is to investigate the presence of the Halloween effect on the ETFs market and to evaluate the ability of two simple Halloween effect-based investment strategies to generate abnormal returns.

## 2. Data and methodology

For investigation of presence of the Halloween effect and effectiveness of the Halloween effect-based investment strategies, 5 ETFs were selected (Tab. 1). Each of the selected ETFs has history longer than 20 years and it tracks a major stock market. For each of the ETFs, the common price series as well as price series adjusted for stock splits and dividends were used. The investigated time period includes 20-years from the end of April 1997 to the end of April 2017. The data were provided by Yahoo Finance databases.

Table 1: Investigated ETFs

ETF	Ticker	Country
SPDR S&P 500 ETF	SPY	USA
iShares MSCI United Kingdom ETF	EWU	Great Britain
iShares MSCI Germany ETF	EWG	Germany
iShares MSCI Japan ETF	EWJ	Japan
iShares MSCI Hong Kong ETF	EWH	Hong Kong/China

Source: own processing

The presence of the Halloween effect is investigated by comparing the summer period and winter period returns. If the winter period (November – April) return of the stock is higher compared to the summer period (May – October) return, it means that the stock followed the Halloween effect pattern in the given year. The returns are calculated using following formulas, where  $r_s$  and  $r_w$  stand for summer period and winter period returns,  $x$  stands for a particular year,  $P_O$  and  $P_A$  are October and April closing prices and  $P_{Ax+1}$  is the closing price reached in April of year following year  $x$ :

$$r_{sx} = \frac{P_{Ox} - P_{Ax}}{P_{Ax}} \quad (1)$$

$$r_{wx} = \frac{P_{Ax+1} - P_{Ox}}{P_{Ox}} \quad (2)$$

If the Halloween effect is statistically significant, there must be a statistically significant difference between the summer period and winter period returns. To evaluate the statistical



significance, the parametric Two-sample t-tests and non-parametric Wilcoxon rank sum tests are used. To determine whether the results of the parametric or the non-parametric test are more robust, the Shapiro-Wilk test for normality of distribution is used. To determine, whether the Two-sample t-test for equal variances or Two-sample t-test for unequal variances should be used, the F-test is performed.

Two Halloween effect-based investment strategies (A and B) are investigated for their ability to generate abnormal returns, i.e. to perform better than a simple buy & hold investment strategy. The buy & hold strategy is based on purchasing the ETF in the end of April 1997 and holding the investment till the end of April 2017. Strategy A is based on investing in the ETFs only during the winter periods and holding cash during the summer periods. In this case, the money are invested in the ETF in the beginning of November and the purchased shares are held till the end of April, when they are sold. This cycle repeats every year. It means that the returns (whether positive or negative) are being realised only during the winter periods and the investor is out of the market during the summer periods. Strategy B is based on the work of other authors. (Haggard & Witte, 2010; Andrade et al., 2013; Dichtl & Drobetz, 2014) It is similar to strategy A, the only exception is that the disposable money are not idle, but they are invested in 6-month U.S. t-bills during the summer periods. The t-bill yields data were provided by the Federal Reserve Bank of St. Louis Economic Research Database (FRED). The returns for the 6-month holding periods were calculated as  $\frac{1}{2}$  of the average weekly yields recorded during the given time period (as the values are captured on the p.a. basis).

### 3. Results and discussion

Table 2 shows the comparison of strength and frequency of presence of the Halloween effect on the selected ETF markets and underlying stock markets. The underlying stock markets are represented by the benchmark stock indices (S&P 500 – USA, FTSE 100 – Great Britain, DAX 30 – Germany, Nikkei 225 – Japan, Hang Seng – Hong Kong/China). It is possible to see that in some of the cases, the results for the benchmark stock indices and the ETFs differ notably. It is caused by the differences in the structure of the ETF portfolios and the stock indices.

As the data show, in the case of all of the ETFs (doesn't matter whether normal or adjusted prices) and stock indices, the Halloween effect occurred in the majority of investigated years. The highest frequency (75% of years – 15 out of 20) was reached by the FTSE 100 stock index and by the ETF EWG that tracks the German stock market. The lowest percentage of Halloween effect years can be seen in the case of the ETF EWJ that focuses on the Japanese stock market. Although the Japanese benchmark stock index recorded the Halloween effect in 70% of years, EWJ recorded it only in 55% of years. This notable difference can be attributed to the significant difference in the composition of Nikkei 225 and portfolio of EWJ.

The data also show that in all of the presented cases, the average difference between the winter period and summer period returns was positive. The Halloween effect impacted especially DAX 30 and Nikkei 225 and the EWU and EWG ETFs. In all of the 4 cases the average difference between the winter period and summer period returns reached double digit values. The lowest difference between the average winter period and summer period returns was recorded by the stock index Hang Seng and ETF EWH. It is also possible to see that in all of the cases, the differences in winter period and summer period returns are very similar for the common ETF prices as well as for the adjusted ETF prices. It means that the dividends are relatively equally distributed between the winter and summer periods and they affect the difference between the winter period and summer period total returns only negligibly.

Also the results of the statistical significance tests are presented in Table 2. The results of the more appropriate test (based on the results of the Shapiro-Wilk test for the normality of distribution) are written in bold. The cases of statistical significance at the 0.1 level of significance are highlighted by a lighter colour, the cases of statistical significance at the 0.05 level of significance are highlighted by a darker colour. There were no cases of statistical significance at the 0.01 level of significance recorded.

Over the last 20 years, a statistically significant difference between the winter period and summer period returns was recorded only in the case of stock indices FTSE 100, DAX 30 and Nikkei 225 and ETF EWG (normal as well as adjusted prices). In the case of S&P 500 and SPY, the non-parametric test confirmed statistical significance at the 0.1 level of significance, however, in this case the winter period as well as the summer period returns data series were normally distributed which means that the parametric test is more appropriate. According to the two-sample t-test, the differences are not statistically significant (however, the two-tailed p-values are only slightly higher than 0.1). These results are in line with the previous research (Arendas, 2017a, Arendas & Chovancova 2016) that shows that the 20-year time period is usually too short to confirm the statistical significance. A longer time period would be more suitable, however, there are not enough ETFs with a long enough history.

Table 2: Results of the investment strategies

ETF/Index	Percentage of Halloween effect years	Difference between the average winter period and summer period returns (percentage points)	Two-sample t-test (two-tailed p-value)	Wilcoxon rank sum test (two-tailed p-value)
SPY	65	5.52	<b>0.1056064</b>	0.0834151
SPY adj.	65	5.63	<b>0.1012460</b>	0.0699312
S&P 500	65	5.50	<b>0.1078599</b>	0.0787040
EWU	70	11.01	0.1264319	<b>0.1762140</b>
EWU adj.	70	11.35	0.1267245	<b>0.1440960</b>
FTSE 100	75	6.04	<b>0.0616624</b>	0.1045880
EWG	75	11.06	<b>0.0336041</b>	0.0935218
EWG adj.	75	9.75	<b>0.0557909</b>	0.1045880
DAX 30	70	10.96	<b>0.0267648</b>	0.0372643
EWJ	55	4.41	0.3493898	<b>0.2914470</b>
EWJ adj.	55	4.77	0.3080370	<b>0.2339660</b>
Nikkei 225	70	11.09	0.0424869	<b>0.0453163</b>
EWH	70	3.20	<b>0.5813340</b>	0.3867080
EWH adj.	65	3.30	<b>0.5687890</b>	0.4327750
Hang Seng	60	2.56	<b>0.6665564</b>	0.4488090

Source: own calculations

The results of testing of the two Halloween effect-based investment strategies in comparison to the buy & hold investment strategy, over the investigated 20-year time period, are presented in Table 3. The results of the most successful of the three strategies for each of the ETFs are highlighted by a darker colour. The results of the second most successful strategies for each of the ETFs are highlighted by a brighter colour. It is possible to see, that Strategy B (investing in the particular ETF during the winter periods and in the 6-month t-bills during the summer periods) was the most successful in the case of all of the ETFs, regardless whether the dividends were or weren't taken into account. Strategy A (investing in the particular ETF during the winter periods and holding the money idle during the summer periods) was the second most successful in all of the cases, except of the SPDR S&P 500 ETF and iShares MSCI Hong Kong, after the dividends were taken into account.

The highest returns were obviously recorded when dividends were taken into account. The buy & hold strategy recorded best results when applied on the SPDR S&P 500 ETF. Over the 20-year time period, it was able to generate total return of 324.96%. The two Halloween effect-based investment strategies were most successful after their application on the iShares MSCI United Kingdom ETF. The total returns climbed up to 466.74% and 605.45% respectively. But similarly high total returns were recorded also in the case of the iShares MSCI Germany ETF (416.21% and 542.55%).

Table 3: Results of the investment strategies

ETF	Buy & Hold	Strategy A	Strategy B
SPDR S&P 500 ETF	197.25%	203.72%	278.05%
SPDR S&P 500 ETF (adj.)	324.96%	265.40%	354.83%
iShares MSCI United Kingdom ETF	111.84%	289.21%	384.47%
iShares MSCI United Kingdom ETF (adj.)	348.74%	466.74%	605.45%
iShares MSCI Germany ETF	96.23%	375.11%	491.40%
iShares MSCI Germany ETF (adj.)	213.62%	416.21%	542.55%
iShares MSCI Japan ETF	6.38%	74.39%	117.08%
iShares MSCI Japan ETF (adj.)	38.19%	105.49%	155.79%
iShares MSCI Hong Kong ETF	60.70%	112.90%	165.01%
iShares MSCI Hong Kong ETF (adj.)	190.30%	185.23%	255.04%

Source: own calculations

The Halloween effect-based investment strategies are able to generate abnormal returns, i.e. to outperform the buy & hold investment strategy. The presented results are in line with findings of Haggard & Witte (2010), Andrade et al. (2013), Dichtl & Drobetz (2014) and Arendas (2017a). The conclusion is valid even if the dividends are taken into account. In some of the cases, e.g. the SPDR S&P 500 ETF (adjusted for dividends) or the iShares MSCI Hong Kong ETF (adjusted for dividends), the difference between the returns of the buy & hold investment strategy and strategy B is relatively small (30 and 65 percentage points respectively), which means that it is possible to assume that if the transaction costs and taxes were taken into account, the Halloween effect-based investment strategy would be slightly less efficient compared to the buy & hold investment strategy. However, in all of the other cases, the dominance of Strategy B (in some cases also of strategy A) should be robust enough to outperform also if transaction costs and taxes were taken into account. It means that the Halloween effect is exploitable not only in theory but also in praxis.

## 4. Conclusion

It is possible to conclude that the Halloween effect is really a global phenomenon. As the results show, this calendar anomaly affects stock markets and related ETFs in different parts of the world (USA, Great Britain, Germany, Japan, Hong Kong/China) however, its strength differs. Over the investigated 20-year time period, the most affected was the German stock index DAX 30 and the Germany-focused ETF (EWG). The least impacted were the two Asia-focused ETFs (EWJ and EWH). The results also show that the simple Halloween effect-based investment strategies can be used to generate abnormal returns when investing in ETFs. This conclusion is valid whether the dividends are taken into account or not. The Halloween effect-based investment strategies were the most dominant in the case of the German ETF, where the buy & hold investment strategy was beaten by almost 300 and 400 percentage points.

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# IS THE "ONE BELT ONE ROAD" (OBOR) PROJECT A LONG-TERM RISK OR A NEW OPPORTUNITY FOR THE EU'S GEOSTRATEGIC INTERESTS IN A GLOBALIZED WORLD ECONOMY?

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**Abstract.** The world economy, especially the EU, has not yet tackled the massive setbacks of the international financial crisis. Although the pace of economic growth of individual countries has been partially recovered, it has been at the expense of rising indebtedness and various interventions in the domestic economies without their fundamental discrepancies being resolved. Provided that the One Belt One Road project (OBOR) that is a response of China to the current situation would materialize, it will not only have far-reaching consequences on the economic position and prospects of the majority of Asian and European countries, but it will likely change the overall distribution of real economic power in the world. This will be substantial in terms of the territorial direction of goods flows and the intensity of the innovations applied. The projected developmental trajectory of this project confirms that it could become a crucial catalyst for the activation of the economic potential of more than 40 mainly less developed countries located near the new transport routes. The aim of this research paper is to examine the impacts of the implementation of this project on the future positions of the EU on international markets and to formulate recommendations for the adaptation of the Slovak Republic's economic policy to the new situation, as well as to point out prospective areas for future cooperation of these countries.

**Keywords:** China, competitiveness, European Union, international business, OBOR

**JEL Classification:** F42, F63, O11.

## 1. Introduction

Worldwide globalization has become the most significant socio-economic phenomenon of the second half of the 20th century, bringing vast changes to each of the territorial components of the world economy and developmental impulses to its individual market segments. Its continuation in this millennium was also in similar spirit and therefore, by some authors, the period was also called the stage of "deep globalization" or "super globalization". (Šikula, 1996; Baláž, 2012) Such a naming of a set of fundamental and even historical systemic changes may

sound exaggerated, but it mainly indicates the fact that globalization penetrated into all of the pores of economic life and significantly influenced every world territory and region.

The definition and the technical explanation of globalization are broad-spectrum in principle, its developmental trajectory is long-term and the "optics" of approaches to its understanding is multidimensional. However, it is clear that the liberalization of external economic relations as the crucial fundament of globalization has created crucial prerequisites for the dynamic expansion of scientific and technical knowledge and its more efficient commercial use. As a result of this process, the degree of interdependence in the world economy, at all its macro-, meso- and microeconomic levels, is continuously increasing and, on the other hand, all its components are jointly responsible for its successful functioning. At the same time, such a process creates a generally accepted assumption that the new stage of globalization forms a stable growth environment for each individual, firm, state, or integration groupings of sovereign states, which can be effectively exploited by them in their own favor, thus promoting general prosperity and positive influence on each such a component. Several experts have also presented globalization as a sort of "mantra" that is substantially more immune to the periodically recurring business cycle, and even when economic depressions or slowdown of economic growth occurred, in their view, these were mostly the result of acute "shortage" of globalization or a misunderstanding of its role.

For the international economy, globalization represents a spontaneous process of ever more intensive integration of the countries of the world into one organized system. It is mainly manifested as the growth of economic activities across national and regional borders. Its main characteristics are the accelerated movement of goods, services, property rights (through business-investment flows) and people (through migration flows), while the importance of geographical distances diminishes and, on the contrary, the world's interdependence and interconnectedness increases. Consequences for the global economy that were brought by the global financial crisis (2007-2010), changed the global distribution of power to a great extent and had a major impact on the positions of individual national economies. As far as EU member states are concerned, even despite the changes in their economic policies, they have not managed to get rid of detrimental impacts of this crisis practically until 2017 and they have lost their growth pace as a result. Other events that have taken place in the world and have had a major impact on the direction of globalization (Brexit, the stalling of TTIP and TPP agreements by USA, NAFTA renegotiation, etc.) should be, nevertheless, also taken into consideration. All these events created the conditions for an even swifter promotion of a relatively new global player, China. The country whose economy was one of the poorest in the world at the beginning of the 1970s is now considered to be the "driving force" of the 21st century globalization. China's ambitious project OBOR indicates that this development trajectory will continue in the coming years.

## **2. Methodology**

At the current stage of development of OBOR, it is practically impossible to make any demonstrative mathematical or statistical analysis or econometric calculations, because of its short timeframe and the preparatory nature of the current phase of the project, as well as the inability to unambiguously include some sub-projects into this scheme. In addition, the OBOR project, even though it is a priority strategic "doctrine" of the Chinese government, is implemented and managed by private or partially private trading companies, and so far published official information does not reveal enough relevant data for such practices. The

authors' work aim was concentrated on obtaining available, yet partial, information and opinions of leading experts (e.g. Shenkar, Baláž) concerning the subject matter and available scientific publications (eg Sharma & Nivedita, 2016) and studies by various international institutions (e. g. OECD or WIPO), reviewing their views and conceiving certain estimates and expectations for the position of the Chinese economy and the EU's development goals which will be influenced by this project. Such knowledge makes it possible to make a certain estimate of future developments and also allows Slovak firms or state administration to adapt to such intentions in advance or, to participate actively in this project.

### **3. The geopolitical context of "One Belt One Road"**

In the context of the above-mentioned global trends and international connections, an upward curve of the development of the Chinese economy and its impact on the new distribution of territorial "lines of force" is researched. An unprecedented shift of its own positions in the world economy, international trade and financial relations is confirmed. The fact that China can undeniably be regarded as a global economic "number two" in 2017 is not only the result of a random paradigm but a broad-spectrum projection of systematic global and regional processes that have fulfilled and played an important role in its advancement. The result is China's increasingly dominant influence on shaping the global layout of the world today, especially with regards to the structure and intensity of international relations, which logically reflects on its stronger role in supporting the worldwide socio-political and economic stability. While growth is gradually moderating as the population ages, GDP per capita remains on course to almost double between 2010 and 2020. As a result, the Chinese economy will remain the major driver of global growth for the foreseeable future. (OECD, 2017)

Recently, global breakthrough has been seen with regards to China's goal to increase its political impact in the world and, in particular, to help transform the domestic economy from industrial giant into global industrial power through long-term strategic projects, and to encourage domestic export industries in gaining new markets. In November 2013, President Xi Jinping came up with a proposal to implement a new project, namely the construction of the Silk Road and Belt of the 21st Century named "One Belt, One Road". In his view, it will solve the most important causes of the instability of the entire Asian region, namely abnormal differences in the level of development of the individual regions and insufficiently developed relations between the Asian countries. The project is also thought of as "a new instrument of economic, political and cultural unification of all parts of Asia". (Xi Jinping, 2017) It is evident that the implementation of this project will have a major impact on the overall changes in international transportation routes, prices and conditions of transport and, ultimately, redirecting them will increase the competitiveness of Chinese goods in all countries involved in the OBOR project. In addition, these new routes will be built, modernized, or operated mostly by Chinese companies with Chinese capital, so long-term benefits from these economic activities will remain in the parent country. Last but not least, OBOR will most likely result in Chinese business entities taking over a significant part of the world's transport services, which have been so far dominated by US and EU companies. A substantial reduction in China's dependence on the transit routes through the US will also be an important indicator of the success of the whole project, whereby losing control of the flows of goods from China will halt the ability to influence developments in the Chinese economy by the US.

In 2014, another strategic document, called the "Made in China 2025", has been adopted and it has become an essential bearer of the idea of internal transformation of the whole economy.



This ten-year plan is linked to its geostrategic ambitions and is essentially complementary to the ambitions of the OBOR project<sup>1</sup>. By its means *"China will basically realize industrialization nearly equal to the manufacturing abilities of Germany and Japan at their early stages of industrialization."* (Miao Wei). But its important mission is also to eradicate the widespread economic disparities, namely when it comes to the level of development between the eastern regions and the Middle and the Western China. Overcoming this is politically and economically vital for China. The available evidence confirms that the implementation of OBOR is conditional on the active participation of the Russian Federation. It can even be said that its alignment with China in this project will be a synthesis of the economic and political interests of the two geopolitical world centers. Indeed, Russian Federation is the only global power which doesn't turn its back on China and this is further accented by the sanctions applied by the EU. Naturally, Russia's foreign trade will therefore most likely continue to incline to China.

Both projects create a new international position for the Chinese economy aimed to consolidate its position as the world's largest economic and political power, based primarily on the high industrial advancement of domestic companies and the use of high technology. The implementation of this project will also be promoted by the creation of a new institutional background, including the recently established Asian Infrastructure and Investment Bank (AIIB). OBOR is intended to create a platform of economic cooperation initially covering 64 countries, but their number should be extended to about 100 countries. Additional data is provided in Table 1.

Table 1: One Belt One Road in numbers

	General			Outward investment		Overcapacity			Energy		Infrastructure	
	Population	GDP	GDP growth	Annual	Cumulated	Iron and steel	Aluminium	Cement	Oil	Gas	Quality of port	Logistics performance
	2015, Mn	2015, Bn USD at current PPP	2010-15 annual average %	2015, Bn USD	2010-15, Bn USD	% of China exports			% of China imports		Index	
<b>China</b>	<b>1 371</b>	<b>19 524</b>	<b>7.8</b>								<b>0.65</b>	<b>0.73</b>
Southeast Asia	632	6 940	5.1	14.6	46.1	25.5	31.4	13.0	7.3	17.6	0.56	0.60
South Asia	1 712	9 799	6.4	1.1	4.4	8.1	5.4	3.0	0.2	0.0	0.46	0.48
Central Asia	200	2 462	2.4	-2.9	9.6	3.5	1.5	2.8	8.1	32.6	0.40	0.45
Middle-East and Africa	193	4 521	6.2	2.8	7.8	11.0	8.0	16.3	37.9	27.2	0.59	0.54
Central and Eastern Europe	322	6 925	1.4	3.2	8.1	1.9	2.5	3.1	11.7	0.4	0.55	0.58
<b>64 countries initially included</b>	<b>3 058</b>	<b>30 648</b>	<b>3.8</b>	<b>18.9</b>	<b>76.0</b>	<b>50.0</b>	<b>48.7</b>	<b>38.2</b>	<b>65.3</b>	<b>77.9</b>	<b>0.51</b>	<b>0.53</b>
<b>Rest of the world</b>	<b>2 917</b>	<b>63 440</b>	<b>1.6</b>	<b>126.8</b>	<b>531.9</b>	<b>50.0</b>	<b>51.3</b>	<b>61.8</b>	<b>34.7</b>	<b>22.1</b>	<b>0.57</b>	<b>0.40</b>
<b>World</b>	<b>7 347</b>	<b>113 613</b>	<b>2.6</b>	<b>145.7</b>	<b>607.9</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>0.58</b>	<b>0.55</b>

Note: This table draws on the non-exhaustive list of 64 countries originally included in the Belt and Road Initiative. The quality of port and logistics performance index averages are not weighted by country size. The quality of port index measures business executives' perception of their country's port facilities; the logistics performance index measures the logistics professionals' perception of a country's quality of trade and transport-related infrastructure; both indices are scaled from 0 to 1, 0 indicating the worst and 1 the best score.

Source: OECD, (2017).

<sup>1</sup>As its strategic priorities, the project identified: improving manufacturing innovations, integrating information technology and industry, strengthening the industrial base, fostering Chinese brands, enforcing green manufacturing, promoting breakthroughs in 10 key sectors, advancing restructuring of the manufacturing sector, promoting service-oriented manufacturing and manufacturing related service industries and internationalising manufacturing (Source: [www.chinadaily.com.cn/bizchina/2015-05/19/content\\_20760528.htm](http://www.chinadaily.com.cn/bizchina/2015-05/19/content_20760528.htm))

#### **4. Is the OBOR project a risk or a new opportunity for the EU's economic interests?**

In the aforementioned context, it is important to identify the impacts of the implementation of both OBOR and the Made in China 2025 projects on the global economic environment, as well as their long-term implications for the economic interests of other countries, in our case particularly EU Member States, and what new opportunities or risks will they bring to other parts of the world economy. The development is clear. *"To date, 68 countries and international organizations have signed agreements with China on Belt and Road cooperation. Total trade between China and other Belt and Road countries exceeded 3 billion \$ between 2014 and 2016, and Chinese investment in these countries surpassed 50 billion \$."* (Xinhua, 2017) China's total investment in the OBOR project is expected to be as high as \$ 4 trillion. (The Economic Times, 2017)

In this context, we should also highlight another strategic trajectory of Chinese expansion, i.e. the fundamental changes in the allocation of its foreign investment. For almost two decades, these investments were intended to provide the necessary raw materials from the less developed countries for the Chinese economy and foreign companies operating on its territory. The by-product was its successful penetration into their domestic markets with consumer goods, machinery and, to some extent, food. However, in the post-crisis period, there was a territorial shift in the direction of these investments into the US and the EU. Their focus is almost exclusively on acquiring shares in companies with progressive know-how, proprietary patents, licenses or dominant market positions in some industrial sectors. The transformation of the intrinsic character of Chinese foreign investment needs to be also evaluated in a broader context regarding strengthening China's position in the area of intellectual property. Since 2016, annual outbound direct investment flows exceed annual inbound FDI flows. China's non-financial outbound investment jumped to \$ 170 billion in 2016. According to data released in 2016 (WIPO 2015), there have been some 2.7 million patent applications worldwide in 2014, up 4.5% from 2013. The largest number of applications in 2014 were from China (928,177 filings), followed by the US (578,802), Japan (325,989), the Republic of Korea (210,292) and the European Patent Office (EPO, 152,662).<sup>2</sup> This data confirms that the "patent center" is moving globally to Asian countries and that China has obtained an ever more significant position, not only in the Asian region but also in the global economy.

These figures confirm that not only China, but also the economies of the second *"Asian wave"* (Indonesia, Malaysia, Thailand, etc.), have their true socio-economic boom yet ahead. Almost all of them have an ever-expanding industrial base with a rapidly growing share of more sophisticated production, and their internal markets have considerable reserves for growth in the internal consumption, which gives them considerable room for maneuver in terms of their ability to respond effectively to changes in consumer preferences in international markets. In addition, together with China, they represent the executive core of the most important regional integration clusters in Asia and are at the center of the most dynamically developing territory of the entire world economy. Within the OBOR project, their own transport links to this region will be built, thus creating a wider room for further development of their own economies.

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<sup>2</sup>If the current trend continues, China's State Intellectual Property Office (SIPO) is set to become the first office to receive a million applications in a single year. China (+12.5%), the EPO (+3.2%), the Republic of Korea (+2.8%) and the US (+1.3%) saw growth in 2014. Japan recorded a 0.7% decline. See: WIPO, 2015.

China's rapidly changing position in the area of production sophistication is also important. In 2000, China's hi-tech exports accounted for only 9.4% of Asian exports, but it was already 43.7% in 2014. According to HSBC, China's share of global hi-tech sales will be more than 50% in 2030, thereby exerting US and European firms from their positions. (Reuters, 2014) It is very important to note that the production of this industry does not create surplus production capacity, as it is in the case of steel, metal or cement production (which are the sources of various trade conflicts between the US and the EU) and has a long-term perspective with logistics networks and infrastructure, services, systems and even the education. According to M. Klein, former CEO of Citigroup, these indications are the evidence that: *"The dramatic and systematically managed development of the Chinese economy has probably become the most important driving force in global markets."* (Shenkar, 2004)

## 5. Conclusion

The global assessment of the results of the Chinese economy and its comparison with the developments in the surrounding countries confirms that even if it has embarked on the path of its industrialization only in the "Third Asian Wave", it will most likely remain at the forefront of the world economy for a long time and will continue to strengthen its position. In the context of the analyzed information, it is further confirmed that: *"China is never doing anything that would not give it concrete benefits. Its plans are always long-term and strategic. Behind each decision, for example regarding the location of a Chinese investment abroad, foresight and consideration of its future commercial or other use can be felt"*. (Mikoláš, 2011)

At present, the Chinese economy is increasingly more focused on the growth of domestic consumption. There are several reasons, the main one is that the production capacity is mainly stemming from the primary sector and the consumer goods, which no longer have sufficient demand abroad. The rapidly growing share of the middle class in China, whose purchasing power is supported by the so called *"soft loans"*, increases the domestic demand and helps solve existing disproportions between the demand and supply side of the market, especially in terms of external economic developments. According to Chinese forecasts, about 2/3 of its population will be middle class in 2030, with a substantial proportion of them having full university education and living predominantly in the cities. In addition, due to the slow growth of the population, every third Chinese will be over 65 in 2035, and China will be forced to take on about 1-2 million workers from abroad in order to secure its own domestic economy (Menzel, 2016). It is clear that under the pressure of these changes, China's production structure will change overall and will increasingly depend on imports. These developmental trajectories will therefore have a significant impact on the nature and technical parameters of future production of Chinese companies, the capacity and orientation of internal consumption, but ultimately the necessity of their alignment with the domestic production capabilities and the licences for imports of those inputs that it will not be available. The whole process will thus become global.

In our opinion, OBOR is "suited" to the overall long-term development strategy of the Chinese economy and in the context of the presented information, this project will play a key role. In addition to creating logistical links among dozens of countries and having a positive impact on the revival of each of them, its very existence will positively affect the cost of manufactured and exported goods, at the very least by increasing the efficiency and flexibility of transport. Ultimately, it creates an opportunity to offset economic differences in the level of their development more rapidly, which will then contribute to their faster industrialization and the growth of their international competitiveness. Through this process, accelerated economic

growth will mean growth in consumption, and China and other countries will be well prepared for it with its capacities and built networks. It is likely that Europe, especially the EU Member States, will constitute the "end-point" of a substantial proportion of the transported goods. The fact that the material substratum of mutual trade moves on the Silk Road will have a positive effect on the trade of all the countries located next to it. On the other hand, there is a practical question as to how will Europe pay for the huge quantities of imported goods in the future. Even in 2016, European Union's deficit of the bilateral trade was more than 170 bil. \$ and it's still growing. A large part of exports consisted of production of goods that could only be purchased in Europe and were linked to domestic technical knowledge, trademarks or patents, and these were a natural projection of the high scientific research level and the quality of its educational base. The fact that the results achieved by European companies are becoming more and more insignificant, ultimately resulting in the loss of their international competitiveness, is further amplified by the fact that a large proportion of the most prestigious ones were already bought by their Chinese competitors and the other portion is for sale.

It is obvious that the situation that will occur in the international economy in connection with the realization of the OBOR project will be very complicated for the unitary interests of the countries, including the Slovak Republic, and if this major change is not carefully prepared for, it also means a huge risk. It can have far-reaching consequences on the political stability of the whole region and its economic independence. On the other hand, this project is a massive challenge calling for the acceleration of large-scale structural reforms across the continent and transformation of the member countries' economies into a unique science-research center. Its current performance could not be enough for such a fast-paced country as China is at present and also the future. Subsequently, the European commercial outputs will not be sufficient to cover the mutual trade deficits. The execution of such a vision continues to collide with many systemic barriers related to the lack of convergence of the EU member states' economic policies, the unification of setting of global priorities and the vehicles for their fulfillment. M. Uzan, Chief Executive Officer of the Reinventing Bretton Woods Committee, perceives the OBOR project as one of the most important milestones of globalization today: *"With the help of new financial institutions, the "One Belt, One Road" initiative opens a new chapter in the course of globalization. This initiative is an extremely important change of the global governance."* (Xinhua, 2017)

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# THE INFLUENCE OF GLOBALISATION PROCESS ON MIGRATION DYNAMICS IN EU STATES

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**Abstract.** Population ageing process, changes of economic systems and development of globalisation have influenced changes on labour market of EU states. Enlargement of EU in 2004 and 2006 has influenced increase of labour migration as population was billing to improve level of living. Consequences of that were changes in structure of local labour markets, which has experienced lack of qualified employees or employees of certain age. Important was the scale of that phenomenon and possibility or lack of then of refilling scarcity on labour market. Aim of the paper is to indicate most common directions of population migration which was eased by freedom of movement of people in the EU and assessment of power of these movements with strong focus on polish labour market. At the same time author will analyse labour migration in Poland after year 2004. Moreover, it will be underlined, that immigrants that are present on local labour markets are very often valued employees and have unique skills or can be one of main factors that rescue social insurance system. Author will make an attempt to solve the research question which is as follow: if labour migration can be seen as positive or negative element of globalisation. Research method implied in paper are mainly statistical and demographic analysis, and the basis of analysis are data obtained from Eurostat and particular statistical offices. Analysis results will be presented as tables and charts which allow to interpret them in more efficient way.

**Keywords:** globalization, labour migration, labour market, free movement of employees

**JEL Classification:** E23, F66, J11, J61, J62

## 1. Introduction

The main problem of the European labour market - which starts to appear even now and is predicted to escalate over time - is undoubtedly the decrease of human capital and ageing of the workforce. These processes are a consequence of an ageing society in Central and Eastern Europe, and are connected to the drop in number of births and increase of the average life expectancy. One of the countries, which will be severely challenged by the dynamics of demographic processes, is Poland. Considering the current rate of employment of people aged over 55 (on the level below 50%), predicted pace of ageing of the population and also the increase of demographic dependency ratio in the period 2015-2050, Poland will, along with countries such as Greece, Portugal, Slovenia, Slovakia and Spain, belong to countries for which increase of the demographic dependency ratio is expected to be very high. Due to the ageing

process of polish society and also an outflow of working-age population from labour market, Poland, similarly to a number of countries of so-called “Inner Six“, is facing a problem of scarcity of employees. Amongst all EU member states Poland is a country with the lowest rate of foreigners (with duration of stay over 12 months) in the overall population. This rate equals only to 0,3%. It means that despite the fact that the scale of permanent immigration has increased in the last few years, especially because of immigrants from Ukraine, on the grounds of nationality Poland remains a homogenous country. (Sytuacja ....; 2015) In comparison, in Luxembourg nearly every second citizen is a foreigner and in countries such as Cyprus, Belgium, Latvia or Spain percentage of residents exceeds 10%, wherein they mostly come from third-countries, that is countries outside of EU. (Fromentin et al., 2017)

The main aim of this paper is to analyse the scale and structure of economic immigration of new member states, after joining EU in 2004 and 2007. The authors of this paper have attempted to answer the following research questions: Should immigration be considered as a threat for domestic labour market or rather as an opportunity for increasing competitiveness of economy? What are the forecasts for employment of foreigners in the future?

Intermediate objective of the paper is to define the developing process of globalization as a catalyst of changes within labour market not only with regards to age, education or structure of employment, but also in a national dimension resulting from more and more common economic immigration. Globalisation shapes a brand new model of economy, labour market and lifestyle of many European citizens.

## **2. Economic migrations and their impact on the new image of labour market**

During the last few decades the process of globalisation has been constantly expanding, consequences of which are noticeable not only in economic, social and political modifications, but also on the labour market e.g. through changes in the structure of employability and increase of unemployment rate. These consequences are determined by the new technologies and a transformation from industrial civilisation into service civilisation. Scale of such changes is implicitly dependent on potential of human capital in local labour market (in the national context). Scientific findings have shown (Balcerowicz-Szkutnik, 2016A; Balcerowicz-Szkutnik, 2016B) that the process of globalisation and accession of new member states to EU in 2004 and 2007 has impacted increase of economic migration flows. “Local” labour markets started experiencing deficit of human capital with regards to the number of employees as well as insufficient qualifications. Many countries, Poland included, perceive the inflow of foreigners eager to take up a job as a genuine aid enabling the proper functioning of many sectors of economy (Artal-Tur et al., 2014; Naude et al., 2017). Therefore, for many EU countries, it is increased demographic dependency ratio, possibility of free movement, growing process of aging of societies and also decrease in level of births, that can be considered as a catalyst responsible for changes in labour market. Inflow of foreigners, who get a foothold on the native labour market is, for many European countries, a remedy for the deficit of labour force caused, in many cases, by economic migrations. (Caliendo et al., 2017; Gorinas & Pytlikova, 2017) It also applies to Poland and it is essential to assess the scale of acquisition of labour market by foreign employees accurately. Analysis of the structure of native and foreign population of European countries, based on Eurostat data about gender and age (migr\_pop2ctz), suggests that foreigners are generally younger than native citizens of the particular country (in 2013 median age values ranged from 42,9 yo for EU 28 to 35,4 for foreigners). Age structure also varies in different economic categories - percentage of work force for native EU 28 citizens



was equal to 65% and for foreigners - over 78%. Considering the fact that median age value for foreigners residing in EU countries has shifted and intensified in range of 25-44 years old, the image of labour market is transforming with special focus on enrichment of active population.

## **2.1. Immigrants – threat or opportunity for labour market?**

Poland, same as countries of Western Europe are also starting to experience occurrence of labour market segmentation and the bases of such a concept referring to the so called “dual labour market” have been developed by American scientists M. J. Piore and P. B. Doeringer. (Solga 2013; Górny & Kaczmarczyk 2003; Sojka 2007)

The main assumption of “dual labour market” is the thesis that labour market is divided into primary and secondary sectors. The primary sector refers to jobs undertaken by native citizens and is characterised by high income, good working conditions, stability of employment or opportunities for promotion. Employment and compensation are regulated by legal system and supervised by trade unions to a large extend. Employees operating within this sector are protected from violations committed by employers. On the contrary, the secondary sector is defined by relatively low compensation, poor opportunities for promotion, low chances for improving qualifications, no guarantee for permanent employment and jobs which are not sought by native employees. These positions are mostly occupied by unqualified immigrants who accept low remuneration. Generally speaking, secondary sector of labour market attracts mostly immigrants and, amongst native labour force - women and juveniles.

For wealthy countries immigration is a source of cheap labour, which does not have to be motivated or invested in with regards to education and trainings. Immigration also has a very positive impact on a national budget due to the fact that budget revenues generated by foreign workforce exceed expenses. In comparison to national citizens, immigrants tend to be more entrepreneurial and more mobile. Even though accepting countries undoubtedly benefit from employing immigrants, there also appear to be some unfavourable implications for local labour markets which may have negative impact on particular social groups. It is connected to the fact that immigrants are willing to do lower-paid jobs and thus deprive a significant amount of native human capital of labour, which leads to the increase of unemployment rate and a burden on system of social security. Therefore, the issue of employment of immigrants needs to be analysed in macro- and not microeconomic perspective. Countries of origin experience loss of well-educated and well-qualified human capital, as migrations are caused mostly due to economic reasons on the search for a better-paid, financially-satisfying job, which is not necessarily consistent with acquired qualifications. Drain of well-qualified specialists exposes economy on wastage of educational resources. Therefore, phenomenon of outflow of well-educated labour abroad is perceived as a loss of human capital. It is hard to assess the impact of migrations on stability of labour market and economic growth as explicitly positive or negative process, however it is definitely worth highlighting that rising scale of economic migrations is an outcome of constantly developing process of globalisation.

## **3. Polish labour market at the time of intensified economic migrations**

Nowadays, migrations undertaken by Polish people are mostly due to economic reasons (in contrast to migrations taking place in 1980s, which were mostly caused by political reasons). Economic migrations are temporary and rather short-term. Joining the European Union has enabled free movement of people and the choice of work environment and a place of residence. Another factor supporting the increase in number of migrations is the openness of accepting

economies and much higher salaries abroad. (Caponi, 2017) In many cases migrations were typically seasonal (construction jobs, gardening or farming) and it is extremely challenging or even impossible to assess the intensification of that phenomenon. (Napierala & Wojtynska, 2017) They were usually taking place according to the “leave the country-make money-return” schema. (Duru & Trenz, 2017) Such migrations are not formally registered and in fact, are not classified as “migrations” in the full meaning of the term.

Economic migrations are usually analysed on the basis of data gathered by examining the de-registration from the permanent place of residence due to leaving the territory of particular country. In such case it is essential to analyse intensification of absences equal to or longer than 12 months as such absences very often turn into long-term or permanent residence. (Simionescu et al., 2017; Wisniowski, 2017). Only then it can be assumed that economic migration has a strong impact on the structure of the labour market of both the accepting country and the country of origin. Detailed data provided by Central Statistical Office is visible in table 1. It presents an approximate number of people undertaking temporary emigration for period not shorter than 2 months.

Table 1: Level of temporary emigration of Poles in years 2004-2015

	Number of emigrants in thousands											
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total	1000	1450	1950	2270	2210	2100	200	2060	2130	2196	2320	2397
Europe	770	1200	1610	1925	1881	1765	1680	1754	1816	1891	2013	2098
EU countries	750	1170	1550	1860	1820	1690	1607	1670	1720	1789	1901	1983
Non-EU countries	20	30	60	65	61	75	73	84	96	102	112	115

Source: Information about size and direction of temporary emigration from Poland in years 2004-2015. Central Statistical Office Warszawa 2016

Dynamics of changes in intensity of emigration of Poles within the period of ten years after joining the European Union (from 2004 until 2015) indicates that the number of emigrants has doubled (2,397), while the most influential were migrations within Europe and EU (2,72 and 2,64). There was also observed increased dynamics in emigration to non-EU countries – it has grown over five times (5,75). The most popular destinations were Norway and Iceland. The jobs were mostly seasonal and connected to harvesting of fruits.

Looking at the dynamics of changes in emigration from a different perspective, namely taking into account the average yearly growth, a number of Poles emigrating to other countries of EU has been growing annually by 9,5% on average and to non-EU countries by 17,23%. As already mentioned those estimations refer to temporary emigrations longer than two months. Intensification of permanent emigration can be assessed only based on the number of people de-registered from permanent residence in Poland (table 2).

Table 2: Number of people de-registered from permanent residence in Poland in years 2004-2014

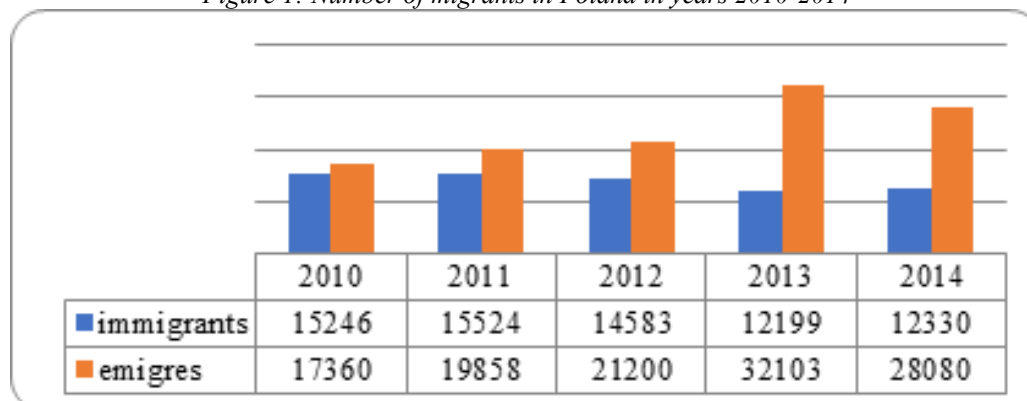
	Rok										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number in total	18877	22242	46936	35480	30140	18620	17360	19858	21200	32103	28080

Source: [http://swaid.stat.gov.pl/Demografia\\_dashboards/Raporty\\_predefiniowane/RAP\\_DBD\\_DEM\\_13.aspx](http://swaid.stat.gov.pl/Demografia_dashboards/Raporty_predefiniowane/RAP_DBD_DEM_13.aspx)

In this case the scale of rise in number of leavers during the period of 2004-2014 is slightly lower (1,48) and the yearly average pace of changes shows an increase of 4%. This change is

of rather low intensity and does not lead to any significant changes in the structure of labour market. However, it is not only the number of emigrants but also their occupational structure that is crucial. The number of professionals of all sorts of fields and educational backgrounds has been considerably limited on the Polish labour market. Gaps started appearing, which are being filled by immigrant employees - mostly from Ukraine. Some of them have obtained the status enabling for registering permanent residence, which helps balance losses on labour market. The difference between emigrants and permanent immigrants is nevertheless still visible and net migration rate is still negative (chart 1).

Figure 1: Number of migrants in Poland in years 2010-2014



Source: [http://swaid.stat.gov.pl/Demografia\\_dashboards/Raporty\\_predefiniowane/RAP\\_DBD\\_DEM\\_13.aspx](http://swaid.stat.gov.pl/Demografia_dashboards/Raporty_predefiniowane/RAP_DBD_DEM_13.aspx) own study.

Apart from permanent immigrants, a significant part of labour force are temporary immigrants. They create a, so called buffer, which supports the efficient functioning of the labour market without taking positions away from national population. In case of Polish labour market, immigrants are not a threat for national work force because they undertake jobs in professions dismissed by nationals. Short-term nature of employment suggests rather complementary and not competitive employment. What is more, hiring immigrants does not impact the increase of unemployment rate but rather stabilises economy of the country. (Mandelman & Zlate, 2017) As per data from the Central Statistical Office, the rate of unemployment has dropped from 13,4% in 2012 to 9,7% in 2015. In 2016 the number of unemployed decreased by almost 230 thousand people and the rate of unemployment reached the lowest levels since 1990 - 8,3%. Average salary has grown by 3,8% in the business sector (in 2016 it was 4277,03 zł), so it has been growing faster than the dynamics of GDP ([www.gus.gov.pl](http://www.gus.gov.pl)).

Despite the record-breaking inflow of foreigners, Polish market has not been saturated yet and the demand for employees from the East is predicted to keep growing. As it is indicated by the research of the biggest Polish employment agency - Work Service Plc, due to increasing shortage of human resources, 39% of companies consider hiring employees from Ukraine. In most cases (22,4%) it refers to lower-level positions and only every tenth employer considers hiring middle-level employees. It is mostly big companies (49,1%) operating within production industry (55,9%) that hire Ukrainians. In trade and service businesses, companies consider employing Ukrainians respectively in 38,9% and 33,8% of cases (Barometr rynku pracy, 2017).

## 4. Conclusions

International migrations are a phenomenon which is very strongly interconnected with processes on the labour market. However, relations occurring in this area are not very explicit.

Unsecure situation on the labour market, the increase of unemployment rate and the lack of stability of employment are perceived as so called “push factors” which force economic migration. However, there is no guarantee of employment on foreign markets. Moreover, it is not necessarily unemployed who decide to search for a job abroad, but also people who are employed at the moment and are motivated to improve the comfort of living for themselves and their families. Current intensification of mobility takes place at the time of economic recovery impacting the image of the labour market. Therefore, it is hard to clearly define the impact of migrations on the level of unemployment. It is worth to also highlight the negative aspects of international migrations. Intensified outflow of human capital may weaken the roots of local economic and social growth. The scale of economic activity might also decrease, and thus educational investments will also be sense negative consequences. Costs of migrations may outbalance obvious benefits. So called “brain drain” which appears to be more and more visible leads to deficits of well-educated youth. (Skorska et al. 2016) Theoretically, emigration has a positive impact on lowering rates of unemployment amongst graduates, however in reality it will have negative consequences in the future.

In the nearest future, due to decreasing number of human resources in working age and aging society, Polish labour market will require foreign employees. However, without improving working conditions, better security of employment and more friendly regulations, employees will not be willing to remain in the chosen country. For many of them Poland is just a transit country. Such partial solutions, the enabling of free movement of people in search of better life conditions and a better paid job, has allowed the enlargement of EU structures in 2004 and 2007.

Together with social and economic development in many sectors of Polish economy there will appear deficits of work force. In most developed countries these shortages are compensated with permission and even encouragement for immigration. In the forthcoming perspective Poland needs to be prepared to import the middle-staff, such as doctors and engineers, as it seems that in the last decade not enough of them have been produced and many of them have emigrated to wealthy West European countries offering high salaries and social benefits. Therefore it is necessary to undertake suitable political and economic decisions which will guarantee work and payment conditions for well-qualified professionals on a level similar to the one offered in leading EU countries. It will enable for keeping high level of economic development and prevent Poland from being left behind as a member of “second-speed” countries.

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## SPATIAL DIFFERENTIATION OF ENVIRONMENTAL SUSTAINABILITY IN POLAND

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**Abstract.** The relations between environmental situation and development of given countries or regions is currently considered as a global problem. From the perspective of policymaking the concept of sustainability and sustainable development is considered as a foundation of economic policy in every developed country. In this regard there is a need for constant quantitative research, which enables to operationalize the multivariate concept of environmental sustainability and provides specific information on the phenomenon. The main objective of the research is to analyze the quality of environment from the perspective of economic sustainability in Poland at regional level. In the research environmental sustainability has been considered as a multiple criteria phenomenon that should be treated as a latent variable. Thus, in the research Structural Equation Modeling methodology (SEM) was applied. The SEM model enables to analyze complex multivariate problems, which cannot be directly measured, and which can be described with latent variables. The research was conducted for Poland in the years 2011-2015 at a regional NUTS 2 level with application of data from Central Statistical Office of Poland. In spite of the short period of the analysis, on the one hand, the obtained results confirm the progress in the sphere of environmental sustainability at regional level. However, the research also confirms significant spatial regional differentiation of the situation in the analyses sphere.

**Keywords:** sustainability, environment, sustainable development, multiple-criteria analysis, Structural Equation Modeling (SEM), NUTS 2, Poland

**JEL Classification:** F64, P25, C38

### 1. Introduction

Regional development that enables both environmental and socio-economic convergence is currently considered as a primary aim of economic policy for all European governments (Pietrzak & Balcerzak, 2016a, Balcerzak & Pietrzak, 2016a). As a result, in recent years the economists interested in regional economics do not only work on such traditional problems like regional economic and demographic potential or situation of regional labor markets (Müller-Frączek & Pietrzak, 2011; Pietrzak et al., 2016, Hadaś-Dyduch, 2016; Konecny and Meluzin, 2016; Murawska, 2016), but also devote significant effort to analyzing social and environmental regional development convergence determinants. (Ramos, 2009; Kuc, 2015, 2017; Kułyk, 2017; Pietrzak & Balcerzak, 2017)

The main aim of the article is to analyze the quality of environment from the perspective of economic sustainability in Poland at regional (NUTS 2) level in the years 2011-2015. The environmental sustainability has been considered as a latent and multiple-criteria phenomenon, which justifies application of Structural Equation Modeling methodology. The analysis was based on the data from Central Statistical Office of Poland.

## 2. SEM model

In the case of theoretical economics and empirical investigations it is necessary to start with significant simplifications concerning the phenomenon under consideration. As a result, complex scientific problems are usually described with small number of variables or even single measurable variable. However, it should be remembered that most of economic factors have complex character and should be rather treated as multiple-criteria phenomenon (Pietrzak, 2016; Małkowska, & Głuszak, 2016; Sekuła & Śmiechowiec, 2016), which cannot be effectively described with one measurable variable, but should be rather considered as latent variables. In that case Structural Equation Modeling (SEM) can be considered as an effective empirical approach. As standard, SEM methodology includes confirmatory factor analysis and path analysis. In comparison to regression models applied in econometrics, SEM models are more elastic because they allow to analyze interrelations between latent variables (Loehlin, 1987; Bollen, 1989).

The SEM model consist of an external model and an internal model. In the case of current research only the external model (measurement model) has been assessed. The model can be given as (Kaplan, 2000; Brown, 2006):

$$\mathbf{y} = \mathbf{C}_y \boldsymbol{\eta} + \boldsymbol{\varepsilon}, \quad (1)$$

$$\mathbf{x} = \mathbf{C}_x \boldsymbol{\xi} + \boldsymbol{\delta}, \quad (2)$$

where:

$\mathbf{y}_{p \times 1}$  - the vector of observed endogenous variables,

$\mathbf{x}_{q \times 1}$  - the vector of observed exogenous variables,

$\mathbf{C}_y, \mathbf{C}_x$  - matrices of factor loadings,

$\boldsymbol{\varepsilon}_{p \times 1}, \boldsymbol{\delta}_{q \times 1}$  - vectors of measurement errors.

The more detailed description of the SEM methodology and its applications are given in Pietrzak & Balcerzak (2016b) and Balcerzak & Pietrzak (2016b, 2016c).

## 3. Empirical model

The current research concentrates on the problem of quality of the environment at regional level (NUTS 2) in Poland in the context of sustainable development economics. The research was conducted for the year 2011 and 2015 with application of data provided by Central Statistical Office of Poland (database Local data bank, <https://bdl.stat.gov.pl/BDL/start>). The phenomenon of environmental sustainability was treated here as a latent and multiple-criteria subject of research. In order to analyze it, four diagnostic variables were applied, which are given in table 1. Variables  $X_1$ ,  $X_2$  and  $X_3$  are considered as dis-stimulants (high values of the variables influence negatively the analyzed phenomenon) and variable  $X_4$  makes the only stimulant. The selection of the diagnostic variables was based on the previous literature review

(see Pietrzak and Balcerzak, 2016b) and was mostly restricted by the availability of data for the whole analytical period.

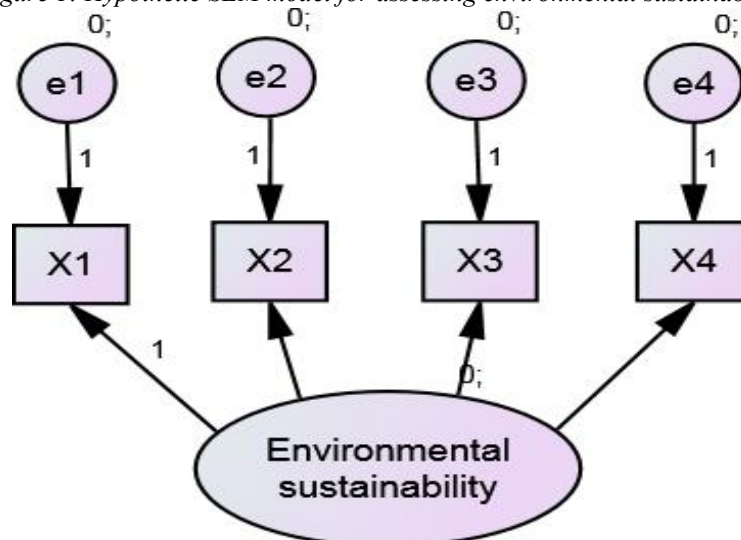
Table 1: Diagnostic variables

No	Variable	Character of the variable
X <sub>1</sub>	Emission of industrial air pollutants in thous per 1 km <sup>2</sup> of total area	De-stimulant
X <sub>2</sub>	Emission of gasses in thous per 1 km <sup>2</sup> of total area	De-stimulant
X <sub>3</sub>	Industrial and municipal wastewater requiring treatment in dam <sup>3</sup> per 1 km <sup>2</sup> of total area	De-stimulant
X <sub>4</sub>	Treated wastewater as a % of wastewater requiring treatment	Stimulant

Source: own work based on literature review (see Pietrzak & Balcerzak, 2016b).

In the research SEM methodology was applied for conducting confirmatory factor analysis (see Pietrzak et al., 2017). Thus, the external model given with equations 1 and 2 was proposed. The hypothetic SEM model used in the research is given in Figure 1. In order to assess the estimations of the parameters the maximum likelihood method was applied. The parameters of the model were estimated in AMOS v. 16. package.

Figure 1: Hypothetic SEM model for assessing environmental sustainability



Source: own work.

The estimations of the parameters of the model are given in table 2. The parameters are statistically significant and obtained appropriate signs in the context of stimulants and dis-stimulants, which confirm appropriate selection of the observable variables. The obtained model does not fulfill the desirable criteria for the values of the Incremental Fit Index (IFI) and Root Mean Square Error of Approximation (RMSEA), which are usually applied for assessing of adjustment of the model to the input data. However, as the analysis was conducted with application of the aggregated data provided by Central Statistical Office of Poland, the obtained values of the mentioned coefficients could be considered as acceptable. (see more: Pietrzak & Balcerzak, 2016)

Table 2: Estimations of the model parameters

Variable	Parameter	Estimate	Standardized estimate	p-value
X <sub>1</sub>	$\alpha_1$	-1,000	-0,957	-
X <sub>2</sub>	$\alpha_2$	-0,381	-0,852	~0,00
X <sub>3</sub>	$\alpha_3$	-7,725	-0,963	~0,00
X <sub>4</sub>	$\alpha_4$	0,394	0,572	~0,00



Model	NFI	RFI	IFI	RMSEA
Default	0,791	0,373	0,795	0,668
Independence	1,000	-	1,000	0,847

Source: own estimation based on data from Central Statistical Office of Poland (database Local data bank, <https://bdl.stat.gov.pl/BDL/start>).

Table 3 presents the values of Factor Score Weights, which were used for assessing the values of the latent variable. It was obtained based on the sum of product of values of Factor Score Weights and the values of observable variables.

Table 3: Factor Score Weights

Latent variable	Variables			
Sustainable Development	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>
	-0,393	-0,251	-0,059	0,045

Source: own estimation based on data from Central Statistical Office of Poland (database Local data bank, <https://bdl.stat.gov.pl/BDL/start>).

Table 4 presents the values of the obtained latent variable for NUTS 2 regions in the years 2011 and 2015. Additionally, it presents percentage change of the value of the variable for the analyzed years. The obtained results confirm disparities between the analyzed regions, where the less economically developed regions, such as Podlaskie and Warmińsko-mazurskie, tend to obtained higher values of the measure of environmental sustainability. The dynamics of the value of the measure confirms general improvements of the situation in Poland. Only in the case of three regions a decrease of the value could be found. Additionally, the heavily industrialized and traditionally the most polluted Śląskie region, the situation has significantly improved, which was additionally obtained without negative consequences for economic sustainability in the region. (see Pietrzak & Balcerzak, 2016)

Table 4: Environmental sustainable development for NUTS 2 regions in Poland in the years 2011-2015

NUTS 2 regions	2011		2015		2011-2015
	SEM	Rank	SEM	Rank	% change
Podlaskie	1,023476209	1	1,024189	1	0,07%
Warmińsko-mazurskie	1,0210446	2	1,022799	2	0,17%
Lubuskie	1,005631395	3	1,016432	3	1,07%
Lubelskie	0,99949017	4	1,005496	4	0,60%
Podkarpackie	0,986060291	5	0,999471	5	1,36%
Zachodniopomorskie	0,979940502	6	0,989872	6	1,01%
Pomorskie	0,972336161	7	0,983696	7	1,17%
Wielkopolskie	0,96050511	9	0,965177	8	0,49%
Kujawsko-pomorskie	0,92585193	10	0,961872	9	3,89%
Mazowieckie	0,968060166	8	0,953909	10	-1,46%
Opolskie	0,809596848	14	0,941271	11	16,26%
Dolnośląskie	0,910308495	11	0,940447	12	3,31%
Łódzkie	0,90133362	12	0,901253	13	-0,01%
Małopolskie	0,898075737	13	0,87276	14	-2,82%
Świętokrzyskie	0,785874561	15	0,848906	15	8,02%
Śląskie	0,143592344	16	0,295465	16	105,77%

Source: own estimation based on data from Central Statistical Office of Poland (database Local data bank, <https://bdl.stat.gov.pl/BDL/start>).

## 4. Conclusion

The current research concentrated on the problem of environmental sustainability of Polish regions in the context of sustainable development concept. In the article environmental sustainability has been considered as a multiple-criteria phenomenon that should be analyzed as the latent variable, which justifies application of SEM methodology.

On the one hand, the research conducted for the years 2011 and 2015 confirms significant environmental disparities between the regions, which mostly relate to the level of their economic development. On the other hand, a positive tendency can be seen, with significant improvement of the environmental sustainability of the most polluted Śląskie region, which was obtained mostly due to modernization and environmental investments and generally without significant socio-economic costs in the region.

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# IMPACT OF GLOBALIZATION ON THE STATE FINANCIAL AID SCHEME FOR STUDENTS OF HIGHER EDUCATION INSTITUTIONS: THE CASE OF THE SLOVAK REPUBLIC

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**Abstract.** The global movement of investments in the field of higher education have become a priority due to structural changes in the global and European economy, because they should support economic growth, employment of young people and regional development in national economics. Student support takes different forms and aims to meet different needs from country to country. In Slovakia, part of the support is indirect – going to parents of students in the form of family allowances and tax benefits. However, direct financial support take the form of scholarships/grants and loans. Merit-based motivation scholarships are granted for excellent results in studies, research and development, artistic or sporting activity. Publicly subsidised loans provided by the Education Support Fund are available for full and part-time students throughout the regular duration of study programmes. Loans range from EUR 500 per year to 2 300 per year and are taken by about 1 % of students. The miserable rate of approved applications are the weakest part of the state financial aid scheme. The data for this study are drawn from two primary sources, Ministry of Education, Science, Research and Sport and the Education Support Fund. The aim of this paper is to analyse impacts of globalization on the state financial aid scheme for higher education students. Complying with the EU rules in the area of Slovak higher education is highly emphasized when providing financial state aid for full- time tertiary students.

**Keywords:** financial aid, development, higher education, student loans

**JEL Classification:** H52, H75, I22

## 1. Introduction

According to the OECD, systems of student support are characterized by a combination of different schemes, but attention has been mostly given to scholarships and grants (i.e., non-repayable subsidies) and loans (i.e., repaid).

In this paper, we provide an economic perspective on policy issues related to state financial aid scheme for tertiary students in the Slovak Republic. We begin by laying out the economic rationale for government provision of student loans. We show time trends in student borrowing and describe the structure of the Slovak student loan market, which is a joint venture of the public sector. We then turn to two topics that are central to the policy discussion of student

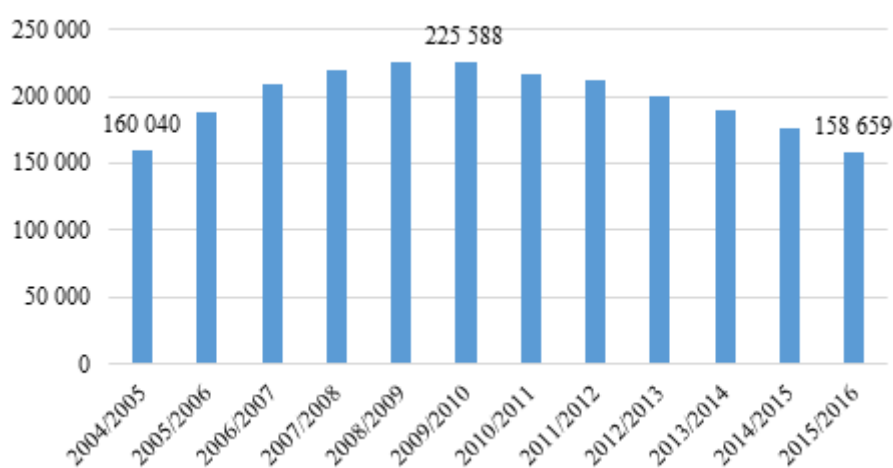
loans: the costs and benefits of the state student loan, and the suitability of repayment system for the Education Support Fund.

Issues regarding the interaction of student support are complex and therefore difficult to compare accurately at European level.

The state financial aid scheme for tertiary students consist of a need-based scholarship, merit-based motivation scholarship, publicly subsidies student loans. Indirect financial aid includes family allowances and tax benefits for the parents of tertiary students. There is a legal right for a need-based scholarship subject to specified conditions in Slovakia. The amount of social scholarship varies from EUR 10 to EUR 270 per month. Merit-based motivation scholarships are granted by the higher education institutions for excellent results in studies, research and development, artistic or sporting activity. Since January 2013 the motivation scholarship has been provided to a maximum of 50 % of students for excellent study results and a maximum of 10 % of students for excellent results in research and development, artistic or sports activity. The amount of the motivation scholarship is set by higher education institutions or faculties. In 2014, in an effort to encourage students' interest in selected scientific fields of study, Universities have been provided with additional finances for merit-based scholarships (European Commission, 2015). The scholarship amount will be determined by Universities; but the funding represents an amount of EUR 1 000 per academic year for 15 % of students in the study fields identified. Publicly subsidised loans provided by the Education Support Fund are available for full and part-time students throughout the regular duration of study programmes. Loans range from EUR 500 to EUR 2 300 per academic year. Family allowances of EUR 23.52 per month are paid to parents of students up to 25 years of age who do not exceed the regular length of study. Tax benefits for parents exist in the form of a lump sum tax deduction of EUR 21.41/month. (European Commission, 2016)

Overall number of tertiary students is decreasing from more over 225 580 in the academic year 2009/2010 up to less than 158 660 in the academic year 2015/2016, as is shown in the Figure 1. (Milošovičová & Stachová, 2016)

Figure 1: Number of tertiary students from academic year 2004/2005 to academic year 2015/2016



Source: Ministry of Education, Science, Research and Sport of the Slovak Republic

## 1.1 Student loans in the Slovak Republic

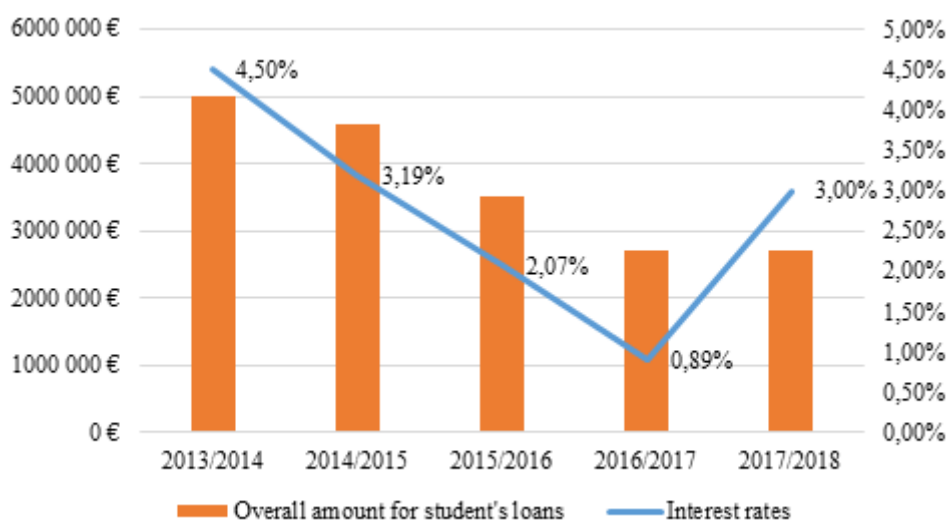
Student financial aid—including grants and loans—plays a key role in supporting students' access to and success in college (Rentková, 2017). Yet, despite periodic increases in grant

funding, students and their families have increasingly relied on borrowing to cover more of the costs of higher education. (Baker et al., 2017) The purpose of state student loans is to enable students to attend higher education institutions and move toward completing a degree or certificate.

In Europe, different student loan schemes have been implemented. (Callender & Mason, 2017) In Finland, the student loan scheme is a conventional, mortgage type of scheme supported by public funds (and a state guarantee). Denmark has developed a hybrid system, combining mortgage-type loans with a subsidized interest rate. The most typical loan scheme in the German higher education system is also a mortgage type loan but with income-contingent safeguards and interest free (100% subsidized interest rate). (Heitor et al., 2016)

In terms of interest rate, the level of subsidies appears to be related to the financial characteristics of the beneficiaries and the coverage of the loan scheme. (Eckwert & Zilcha, 2017) Due to the lack of financial resources, the overall amount of student loans has been decreasing from the beginning of the Education Support Fund (Fig. 2). If the Education Support Fund is not funded or getting the loan from the European Investment Bank (the EIB), it will be possible to allocate maximum of EUR 2.8 million annually to loans for students. The development of the interest rates was influenced by very low interest rates in the financial markets.

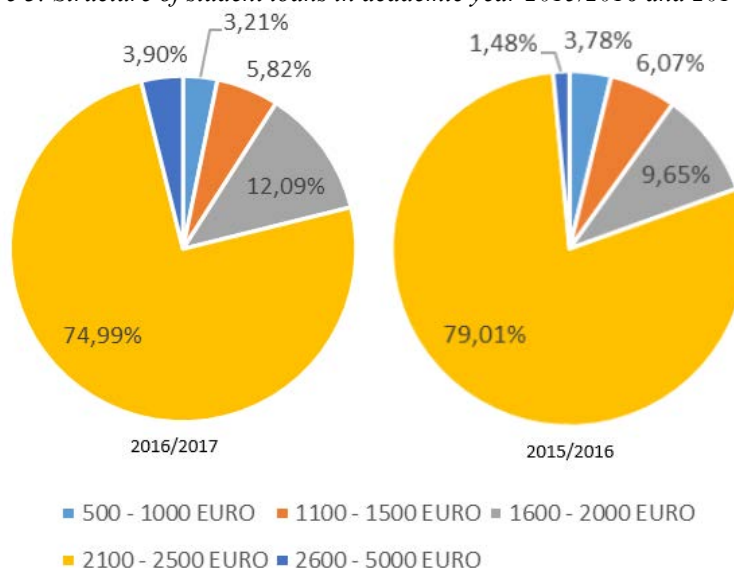
Figure 2: Overall amount of student loans and development of interest rates from academic year 2013/2014 to academic year 2017/2018



Source: Education Support Fund

As one can see, the structure of approved student loans was quite similar in the compared academic years (Fig. 3). The highest loans are dedicated for PhD. students and the maximum loan amount is changing almost every year. In academic year 2014/2015, the maximum student loan for PhD. students was up to EUR 5 000. Nowadays, the students' interest is higher than the financial possibilities of the Education Support Fund, so the maximum loan amount was cut on EUR 4 500. (Fond na podporu vzdelávania, 2017)

Figure 3: Structure of student loans in academic year 2015/2016 and 2016/2017



Source: Education Support Fund

In the academic year 2016/2017, the average student loan reached the amount of EUR 2 240. The loan is given in one instalment of equal amounts by transfer to the student's current bank account. The data on student expenditure reveal that in all countries students have to spend the biggest share of their income on living costs. For 16 of the 20 countries for which these data are available the percentage of monthly income spent on living expenses exceeds 75 % of total expenditure for students not resident with their parents. (Monks, 2014)

## 1.2 Repayment of the student loan from the Education Support Fund

The negative impacts of the economic crisis on the payment discipline of borrowers, characteristic to the financial sector in general, were observed among student loan clients to a much lesser degree (Findeisen & Sachs, 2016). Credit risks and the repayment discipline of clients play a pivotal role in the long-term stability of the student loan scheme. (Britt et al., 2017)

Table 1 includes three cases of approved student loans with the different amounts (EUR 500, 1 600 and 2 300). The monthly instalment is very low in all cases, just between EUR 4.53 and 20.84. The maximum maturity is for all student loans 10 years after the borrower's graduation.

Table 1: Comparison of student loans with 10 – year maturity in the academic year 2016/2017

Amount of the loan	EUR 500	EUR 1 600	EUR 2 300
Maturity	10 years	10 years	10 years
Postponed repayment	5 years	5 years	5 years
Annual interest rate	0.89 % p.a.	0.89 % p.a.	0.89 % p.a.
Monthly instalment	EUR 4.53	EUR 14.50	EUR 20.84
Annual percentage rate	0.92 % p.a.	0.92 % p.a.	0.92 % p.a.
Total paid	EUR 543.68	EUR 1 739.76	EUR 2 500.91
Interests paid	EUR 43.68	EUR 139.76	EUR 200.91

Source: Education Support Fund



The rest of the paper is structured as follows. Section two provides the methodology used and the characteristics of data, section three presents the results and discussion, while the last section concludes the paper.

## **2. Methodology and data**

Our analysis consists of the following steps:

- To find appropriate data about the financial aid system and student loans for tertiary students in the Slovak Republic,
- To define indicators, on which the analysis and the prognosis will be carried out,
- To evaluate results of our analysis.

For later purposes when we analyse the impacts of globalisation and international cooperation on state financial aid scheme, it is useful to know the parameters of the student loan system. We are particularly interested in direct financial allowances for tertiary students.

To investigate key issues concerning financial aid scheme, we draw on data from Ministry of Education, Science, Research and Sport and the Education Support Fund to track how the student loans evolved between 2013 and 2016. The data used in this paper relied on borrower- and loan-level information for students who entered repayment between 2010 and 2013.

The data for this study are drawn from two primary sources, Ministry of Education, Science, Research and Sport and Education Support Fund. The Education Support Fund, Slovak student loan institution, is a non-state special-purpose fund established in 2013. Education support fund provides loans to students in higher degrees in Slovakia and Slovak students abroad.

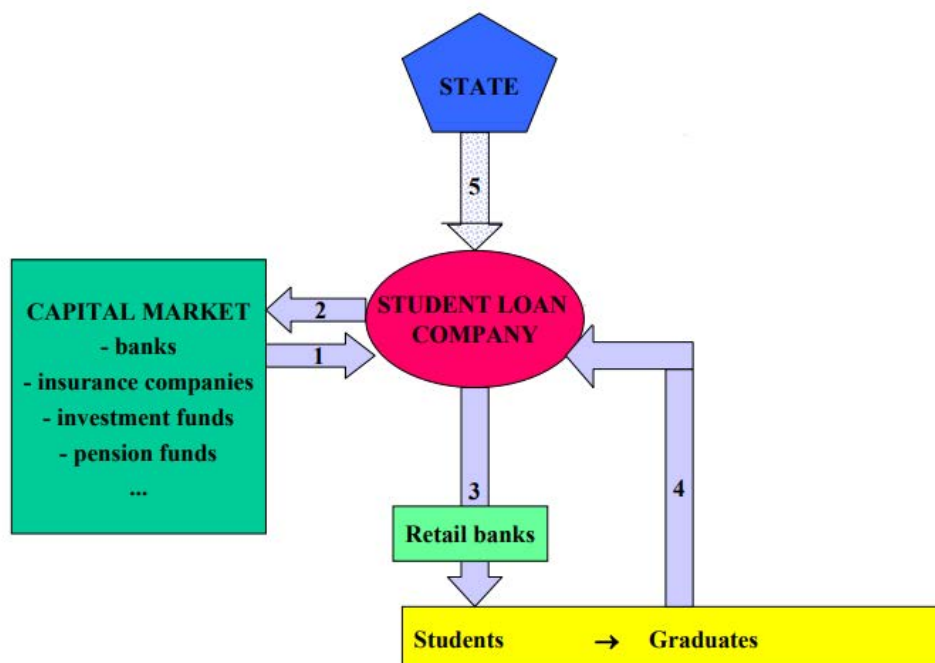
## **3. Results and discussion**

Taking into account the diversified features of student loan systems, the introduction and further development of these systems have always been associated with specific political orientations, beyond requiring different levels of public investment, which strongly depend on the level of subsidized instruments associated with each loan system. (Hillman, 2015)

The European Investment Bank supports the European Higher Education Area (a more comparable, compatible and coherent system of higher education in Europe) and the European Research Area (a unified and open research area to collectively address Europe's grand challenges), as tertiary education and high quality academic research are key to pushing the knowledge frontier. This involves financial backing for leading-edge universities for reforms targeting the quality and competitiveness of tertiary education at a global level. The loan scheme soon takes off and in 2017 the Education Support Fund called on the EIB to help ensure that their financing capacities could meet student demand. The EIB will be behind more than half of all student loan disbursements in Slovakia.

In 2018, the financial resources (funds) require to finance the operation of the Student Loan Scheme will be obtained from the financial markets with the help of a government guarantee, but basically without any significant reliance on the resources of the budget.

Figure 4: The new student loans scheme in Slovakia



Source: Author's scheme

Due to globalization, the Education Support Fund as the Slovak student loan company can cooperate with the various financial institutions. The most important financial partner for obtaining financial sources is the EIB. The previous system did not admit the international cooperation and the international financing of student loans.

With an interest rate that appropriately accounts for the government's borrowing and administrative costs, as well as default risk, this repayment program could be self-sustaining. (Webber, 2017) Designing such a program requires detailed data on individual earnings, which are currently unavailable to researchers. If loan policy is to be firmly grounded in research, this gap in the data needs to be closed.

From humble beginnings, Education Support Fund has established itself as a model for European student loan schemes. It is clear that the company has the sustained development of both Slovak students and universities as its foremost aim. The EIB looks forward to helping the Education Support Fund drive home this success.

Table 2: The impact of globalization on the state financial aid scheme in the Slovak Republic

Year	2017	2018	2019	2020	2021	2022
Own resources	2 700 000	2 800 000	3 000 000	3 200 000	3 000 000	3 000 000
EIB loan	0	4 000 000	4 000 000	4 000 000	4 000 000	4 000 000
Amount of student loans	2 700 000	6 800 000	7 000 000	7 200 000	7 000 000	7 000 000
Approved student loans	1 205	3 036	3 125	3 214	3 125	3 125

Source: Education Support Fund

The Education Support Fund receive a loan from the EIB in 2018. The overall amount of the loan is EUR 20 million and this loan is divided into five instalments (Tab. 2). Due to the loan, twice and a half more tertiary students will get a loan from the Education Support Fund.

## 4. Conclusion

Education support fund, Slovak student loan institution, is a non-state special-purpose fund established in 2013. Education support fund provides loans to students in higher degrees in Slovakia and Slovak students abroad. This research paper discusses the challenge of enlarging the lending possibilities of the Education Support Fund for tertiary students in the Slovak Republic in the period 2018-2022, by extending the social support system with a new loan scheme in 2018.

In the Slovak case, for most students, the family is the most important source of income. The exceptions are those students who benefit from grants and loans, and for whom the most important sources of income are grants and subsidies. This is congruent with the fact that those students benefiting from grants come from poorer social economic backgrounds and may need a loan to face contingent financial instability. (Gicheva, 2016) The main goal of this paper was to publish the partial results of the research linked with the new student loan scheme for tertiary students in the Slovak Republic.

The positive effect of globalization on the international financial cooperation implies that greater capital will encourage penetration of the student loans in the Slovak Republic. The main conclusion of our research is that the student loan system has proven to be resilient and to extend students' options, as well as to stimulate a "new culture" of investment in education, although it will be characterized by a low penetration during the initial five years of operation, covering only about 2.5 % of the student population.

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# DIFFERENT CONTENTS OF DAILY CONSUMPTION GOODS OFFERED ON MARKETS OF SELECTED EU COUNTRIES

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**Abstract.** Globalization allows development of international trade and multinational companies sell their products all over the world. However, in some countries there are sold products with similar price but with different contents (foodstuffs, hygiene products, disinfecting agents, etc.). In 2011 the Association of Slovak Consumers ran a test which proved that selected goods bought in different EU countries produced by the same multinational company, had different contents and also various characteristics and quality. According to the European Commission, products can have different contents in different countries but producers must show and present it clearly. From this point of view this is not legislative but moral problem since if consumers buy an identical product in different places they assume that it is really identical product. Considering EU newly associated countries they pay attention to this topic especially in the Czech Republic, in other countries the research lag behind. In the SR, for example, we miss survey of consumers' opinions related to this topic and also research concerning their ability to distinguish goods with different contents and different quality resulting from it. There is also missing analysis of approaches and attitudes of responsible institutions of the European Commission and particular professional and interest groups in selected countries related to the topic. The paper researches secondary sources of information about the topic in Slovakia and abroad.

**Keywords:** goods of daily consumption, different contents, multinational company

**JEL Classification:** F19

## 1. Introduction

The topic concerning different contents of daily consumption goods has been actual for a longer time. In 2011 the Association of Slovak Consumers ran a test which proved that selected goods bought in different EU countries produced by the same multinational company, had different ingredients and characteristics. This situation concerns a wide range of products, starting with foodstuffs and hygiene products to disinfecting agents and clothes. From newly associated countries politicians and journalists especially in the Czech Republic had paid attention to this situation, but nowadays also other countries start to deal with this problem.

There are various possibilities how to solve the problem. For example, the Prime Ministers of V4 countries want the European Commission to change legislation. Another solution - various labels can be used to mark products: label marking products with different quality (e. g. Easter Nutella, Western Nutella) or label marking products with the same content and quality (e. g. European Commission Label guaranteeing the same content of a product).

In the autumn 2017 an international web page with information about particular cases of double quality of foodstuffs in the European Union retail markets should be created. Slovakia should take patronage over the web page and other countries from V4, Slovenia, Croatia, Bulgaria and Romania should participate. Czech Eurocommissioner for justice and consumer protection wants to exert pressure on multinational companies producing goods with double quality through national trade and consumer chambers according to the results of tests published on the web page.

Or customers themselves should be more active; they should concern on the problem, read packages and labels and therefore exert pressure on producers through national trade inspections.

## **2. Methods**

We use literature review to research the problem of different quality of selected products of multinational brands sold in the European Union. We researched mostly internet sources dealing with problem. We determined time schedule and main highlights of the problem during previous years using methods of comparison and synthesis. At the end we offered various solutions of the problem, described their pros and cons and we set their order based on their importance and a chance for success.

## **3. Different quality of selected products in the European Union**

Back in 2011 the Association of Slovak Consumers ran a test aimed at comparison of contents of selected foodstuffs produced by multinational companies and sold in Slovakia and abroad. They bought identical products in Germany, Austria, Poland, the Czech Republic, Bulgaria, Romania, Hungary and Slovakia. Under special supervision of the State Veterinary and Food Administration of the Slovak Republic the foodstuffs were tested by accredited laboratories of the Veterinary and Food Institute in Bratislava and the Veterinary and Food Institute in Dolný Kubín.

The test proved that some foodstuffs like coffee, beverages, chocolates and spices of the same brand sold in Slovakia and abroad do not have the same taste, contents and even weight (Sudor, 2012). Quality of identical products was mostly worse in “new member states of EU”, on contrary quality of goods bought in supermarkets in Germany and Austria achieved the highest standards. According to the test of the Association of Slovak Consumers there are the first, second and third class of products. The first one it means the highest quality is sold in Germany and Austria, the second one in the Czech Republic, Poland and Slovakia and the third one in Hungary, Romania and Bulgaria. (Nagyová, 2015)

The company Coca-cola has own factory in each of tested countries but every tested Coca-cola had different content of sugar and different compositions of sugar. A customer sensitive to some kinds of sugar cannot be sure about the same ingredients of Coca-cola in various countries. The drink contained sugar in four countries and cheaper iso-glucose in other four countries.

The company Kotányi packs spices in one plant but contains of the products is different. According to the test, black pepper for Hungary, Slovakia and Austria was wetter than recommended standard. Black pepper for Bulgaria contained too much crushed and damaged grains. Also the weight of packs of black pepper was different in tested countries – 17 grams, 20 grams or 24 grams for the same price.

German pack of coffee Jacobs Kronung contained fine and pale roasted symmetrical beans, Polish pack contained dark and non-symmetrical beans. In other countries, it was able to buy only milled coffee.

Only chocolate Milka had the same quality in each tested country. However, only German and Austrian chocolate had label guarantying 100% Alpine Milk on the package. Chocolate for new EU countries hadn't it, but the content was the same.

Ten members of the European Parliament from Slovakia, Croatia, Slovenia, Romania, Hungary, Malta and Italia discussed the problem of different quality of foodstuff in the year 2015 and appealed to the European Commission to stop discrimination of consumers. They objected to multinational brands delivering according to their opinion goods with lower quality to the Eastern Europe. (Nagyová, 2015) The European Commission didn't give any statement.

In the Czech Republic media, experts and also laic public and politicians pay the highest attention to this topic among newly joined EU countries. A few researches collecting opinions of Czech consumers related to this topic have been done in the Czech Republic. Based on them Czech consumers perceive food inadequacy as expression of manipulation and injustice and they really pay a lot of attention to this topic (dtest, 2016). According to the State Veterinary and Food Inspection almost 90 % of Czech consumers are not satisfied with lower quality foodstuffs sold in the Czech Republic in comparison to the Western Europe. It often concerns foodstuffs with identical packing and logo and similar price, but with different contents. (Mth, 2016) Even in spite of this fact the Czech Minister of agriculture did not succeed in opening discussion among European ministers of agriculture during the session in Brusel in 2016. His effort was supported only by Slovak colleagues. Representatives of other countries did not consider this topic as the topic to be dealt with. (Ekonomika, 2016)

Multinational companies (business companies running their business activities with products or services in the areas of several countries) answer back that they modify products to meet eating and gustatory customs of consumers in individual countries and to their economic conditions as well.

In 2016 the Post bank analysed buying behaviour of Slovak citizens. (Kušnírová, 2016) It results from the analysis that Slovak consumers are interested in high quality foodstuffs and in western regions of Slovakia they are willing to pay even higher price for them. The same opinion concerns buying sport shoes and equipment. So based on the above mentioned facts we can state that Slovak consumers will not be satisfied with different contents of daily consumed goods, e.g. food showing different quality in comparison to goods in abroad.

However, these findings didn't cause significant response in the society. They stayed unnoticed in the Slovak Republic up to the test made by the Ministry of Agriculture from the year 2016. (Ministry of Agriculture and Rural Development of the SR, 2017) Within the test, the State Veterinary and Food Administration of the Slovak Republic took samples of 22 foodstuffs sold in groceries in Bratislava and in Austrian villages Kitsee and Hainburg in November 2016. It covers wide range of goods: dairy products, meat and fish products, chocolate and bakery products, beverages, coffee, seasonings, spice and tea. There were tested colour, consistency, aroma, flavour and overall appearance in a sensoric test. Examiners assessed also labels: statements of ingredients, nutrition facts or allergens. There were tested some qualitative indicators too: contains of meat in meat products, contains of fat and proteins in dairy products, contains of cocoa substance in chocolates, solid share – the weight of a particular product within the overall weight (e. g. a cheese in a pickle), presence of additives – preservatives, sweeteners and colourings.

Only 9 tested products of multinational brands had the same ingredients. There were some products that stood in the test the worst: non-alcoholic beverages (more sweeteners and preservatives in drinks in Slovakia), spices (higher moisture, higher share of crushed material and smaller share of natural colouring for Slovak consumers), tea (bags with lower weight, lower intensity of aroma and flavour), mozzarella (lower weight of the solid share in the SR) and meat products (smaller percentage share of meat for Slovak consumers).

The latest test caused bigger stir among Slovak population than previous one. It could be related with demographic development of society. Just younger generation of consumers demands better food safety conditions (Yu et al., 2017) and they also attempt to purchase ethical products (Hwang, 2016) and local food (Feldmann & Hamm, 2015). The increased interest of young people in quality foodstuff (Basha et al., 2015; Roediger & Hamm, 2015; Hempel & Hamm, 2016; Bazzani et al., 2017) can cause the increasing concern about the problem of different quality of the same products trading home and abroad in selected countries in EU.

After the latest test, the Minister of agriculture Gabriela Matečná herself started cooperation with the Czech Eurocommissioner for justice and consumer protection – Věra Jourová, who has been dealing with the problem of double quality of multinational brand products for longer time. Moreover, the Prime Minister of SR – Róbert Fico – has manifested his interest to solve the problem and he called the summit of the Prime Ministers of V4 countries. (TASR, 2017) On the summit, there were two proposals how to solve the problem.

The first idea was to establish the internet page. Eight countries should participate on the web page – V4 countries, Slovenia, Bulgaria, Croatia and Romania, The Slovak Republic should take patronage over it. The web page should publish results of tests of products bought in various countries and it should have various language versions. The start of web page was planned in the autumn 2017, but in September 2017 it is still not working.

The second proposal was to change EU legislation. However, the European Commission claims, that legislation is sufficient and particular countries have means how to punish such practices of multinational brands. (Čimová, 2017, B) But lawyers from Palacký University Olomouc in Czech Republic have declared that there is not such protection in both national and European legislations how to ban unfair practices of multinational companies. There are national Trade Inspections, but they can deal only with noticeable differences, small differences cannot be affected. The lawyers have suggested establishing common Label of European Commission declaring that a product has the same ingredients and characteristics in all countries of the EU (Řeháková, 2017). However, it takes a lot of time to implement any European Commission action.

Meanwhile, there were other tests of multinational brand products in Hungary and Czech Republic. Hungary tested 96 products and found differences e. g. in comparison of beer – the beer sold in Hungary had different ingredients and lower percentage of alcohol than the beer of the same brand sold abroad. (Ministry of Foreign and European Affairs, 2017) The Czech Republic tested 21 products in five countries – The Czech Republic, Slovakia, Hungary, Germany and Austria. (Leinert, 2017) Only three products were the same. For example, fish fingers of the brand Iglo from the Czech Republic had only 50% of the meat and the same product from Germany had almost 64% of the meat. Both products are made in the same plant in Germany. Differences were also discovered during the test of washing powder Persil. In Germany and Austria, it had 11.3 grams of active substance contrary to the same product in rest of countries (9.7 g in the CR, 9.5 g in the SR and 9.3 g in Hungary). The producer of Persil – company Henkel – claimed that the differences arise from customer habits. According to



Henkel, customers in the Czech Republic or in Slovakia use hotter water during laundering, therefore there is no need for bigger amount of active substance.

#### 4. Conclusion

The problem of different ingredients and characteristics of selected products of multinational brands sold within EU had already taken for a longer time. Mr. Albín Sladovník, former chief of the Slovak Trade Inspection, has perceived the problem (especially with cosmetic products) from the year 1994. According to him, there has never been such interest about the problem like this year. (Čimová, 2017, A) The interest was raised after the test of the Ministry of Agriculture when the Prime Minister of the SR has involved into it. He even wanted to boycott products of foreign brands in public catering. However, some experts have suspected him, that it was only cover-up manoeuvre before other – more important – problems of the Slovak Republic.

There had been various proposals how to solve the problem but it takes a lot of time and an effort of politicians on both national and European level to implement them. The web page linking eight Eastern countries under patronage of Slovakia has been creating from February 2017 and in September 2017 it is still not working. There is no interest in the European Commission for change of EU legislation, although the President of the European Commission, Jean-Claude Juncker, admitted that there cannot exist “second consumers’ category” and consumers in Slovakia, the Czech Republic and Hungary deserve the same quality than consumers in Western countries of EU. (European Commission, 2017) However, even if there is an effort to change EU legislation, it will take two or three years to change it.

Mrs. Věra Jourová – the Czech Eurocommissioner for justice and consumer protection – wants to start big testing of multinational brands products across counties of the EU, to publish results on the web page and to exert the pressure to producers through trade and food chambers and inspections to change their practices. (Česká televize, 2017) But producers have always been defended that they hadn’t broken any rules and therefore everything is all right.

Mr. Albín Sladovník – former chief of the Slovak Trade Inspection – recommend, that consumers should to teach to read packages and labels of products and therefore to contact national trade inspection and let it to solve unfair practices of multinational companies. Consumers should show producers of multinational brands that they are not satisfied with different (and mostly lower) quality in their countries. The food market has seen a trend towards health issues (Bech-Larsen & Scholderer, 2007; Aschemann-Witzel et al., 2013, Stratton et al., 2015) and perceived lower quality of foodstuffs in some countries can be understood as something unhealthy. Also according to our research, it seems that the pressure from customers will be more effective than from politicians on national or European level.

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## FACILITY MANAGEMENT IN THE GLOBALIZED SOCIETY

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**Abstract.** Facility management is the multi-disciplinary kind of work that covers a wide range of various activities, responsibilities and knowledge. Facility management provides and manages a variety of support services in order to prepare all the organisational functions, putting the accent on an integration of primary activities in strategic, tactical and operational levels. In the final decade of the previous century, facility management industry emerged as one of the fastest growing sectors at the international level. Nowadays, the importance of the facility management is readily acknowledged in many companies worldwide, which recognise the necessity of properly managing elaborate and expensive support facilities. The tasks are multi-disciplinary and cover a wide range of activities, responsibilities, and knowledge, because every aspect of an organisation may come under the competency of the facility management. The main aim of the paper is to point out the well-founded applicability of the global facility management in companies, which in order to achieve the competitive advantage correctly strengthened the corporate core business and shift the support activities into the management of a specialist in this field. The paper also covers the scope of the facility management in the international context, and also in the Slovak Republic, considering the specificities of individual countries.

**Keywords:** facility management, support process, corporate management, globalization.

**JEL Classification:** F60, L21, M10

### 1. Introduction

An important part of the managerial activities is also facility management. Facility management aims to streamline the support processes in companies and to reduce their operating costs using an appropriate adjustment. It is a method of a mutual harmonizing of employees, working activities and working environments, which includes the principles of business administration, architecture, humanities and technical sciences. (Janoskova, 2016)

In the past, the issue of the facility management was closely linked only to the operation and maintenance of buildings and realties. In practice, it includes various support processes necessary for the operation of all companies.

The aim of business management is to maximize the efficiency of the main activity and therefore the optimization of this activity is ongoing. In order to concentrate on the main activity, the organization has to decouple its support activities, managing them internally as a part of the corporate organizational structure, or externally, representing outsourcing or the

company can use a combined form. (Somorová, 2007) The form of provision of facility management services can be various:

- the integration of the facility management unit into the organizational structure,
- outsourcing,
- partial outsourcing.

If the facility management department belongs to the management of an enterprise, then it is the top management in terms of the specific component of the management of support activities. Through the facility management, the enterprise cooperates with other levels of the management creating systemic linkages between individual business activities and units of support activities. The purpose is to achieve strategic, tactical and operational goals. Based on these objectives, the facility management sets strategic- long-term, tactical and operational plans to manage support activities. According to Somorová (2006) outsourcing is the assumption of comprehensive responsibility for a coherent part of the activities from the entity to the contractor who provides facility management services. It should appropriately complement the main business activity to which the entity targets and exclude the support activities from the corporate management. The supplier is responsible for the quality of the services performed. (Somorová, 2010) The most used form is the partial outsourcing, only few providers of facility management services are not able to comprehend the nature and details of the main activity of the business entity. And thus, support activities are provided by several providers of facility management services and their subcontractors.

## 2. Literature review

According to the European Standard STN EN 15221-1, facility management is defined as the integration of processes within the organization to provide and develop agreed services that support and increase the efficiency of the core activities of the organization. According to the standard, support services provide the organization's core activities delivered by internal or external providers. (Svizzero & Clement, 2016)

In the course of time, many authors worldwide have tried to bring the detailed definition and explanation of the facility management. According to Rydvalova et al. (2007), the basic principle of facility management is based on the creation of favourable conditions to fulfil the main activity of the company. Vyskočil (2009) defines facility management as a method that helps the company to reconcile employees, their working environment and working content, as a method that contains the principles of business architecture, administration, technical and humane sciences. Somorová (2010) analyses these interrelationships and describes them as a reinforcement of all processes in the society, whereby workers in their working environment perform optimally, resulting in economic growth and also in increasing the competitiveness of the company. Styblo (2011) defines the facility management as a field focused on optimizing support activities in terms of society and economy as a need to harmonize the working environment, workers and work activities. Then the goal is to create the best conditions for the fulfilment of the main productive business activity, which shows that the facility management is involved in the management of supporting activities, resulting in a smooth running of the main activity. Kuda & Beránková (2013) claim that the main aim of the facility management is cost saving without the need to limit the performance of the enterprise in any way. They consider better use of facilities, spaces, or a higher quality of working environment to be the top benefits of the facility management usage in the company. Štrup (2014) describes facility management as a modern industry which is applied in building management and which helps

save and optimize costs, resulting in higher profits. It does not consider only the temporary trend of corporate management but the way of professional management and management of corporate resources. Shi et al. (2016) indicate that facility management is a multidisciplinary profession, which aims to ensure a proper and functionally-built environment based on people, space, process and technology. But, Min et al. (2016) determine that the perception of facility management only within the environment and the building is outdated and extend this way of managing of support processes, including purchasing, sale, development, quality or activity related to the corporate finance. Wetzel & Thabet (2016) report that facility management is a hybrid type of management discipline that combines the expertise in managing people, assets and processes.

Last surveys, e.g. work of Pärn et al. (2017) describes facility management as an integrated approach to improve, maintain and adapt business premises, supporting better and faster fulfilment of the corporate primary goals, or as a process that the company provides to create working environment of a good quality. Zavadskas et al. (2017) claim, that most of the existing management systems is primarily focused on gathering knowledge and information within one area, while the facility management requires the integration of different types of information and knowledge created by various members of the facility team building, such as maintenance records, causes of chain failures, control records, and so on. The same opinion is shared by Becerik-Gerber et al. (2012) who assert that facility management encompasses and requires multidisciplinary activities, and thus has extensive information requirements. Currently, the sustainability has a very high importance for the facility management companies, as depicted in the survey by Cadez et al. (2017). Especially the identification of weak spots and the improvement of the corporate image are the main reasons of the sustainability of the facility management.

### **3. Development of the facility management**

To understand the nature and purpose of the facility management concept, it is necessary to know its origins, history and development.

The beginnings of the facility management go back to the USA. In the seventies of the twentieth century, the concept of the facility management was not familiar to ordinary people, and even facility managers did not perceive the importance of this profession. It is the result of conservative and inflexible business hierarchy. These managers were mostly called building managers or property managers, but it was not possible to unite these activities into a complex activity. In the United States of America, in May 1980, 47 participants attended the facility management meeting, resulting in the establishment of a new National Facility Management Association (NFMA). 27 out of the 47 participants became its members. The conclusion of this meeting was that the NFMA had its own and specific regulations, plans, constitution and members. A year later, in 1981 in Houston, an annual conference took place, attended by 27 lecturers and 87 listeners. During this conference, the association was renamed to the International Facility Management Association (IFMA). This step has resulted in the dynamic development of the facility management. Since that moment, IFMA has its members, organizations or affiliated organizations around the world.

At the initiative of the Dutch Standards Institute in 2003, the Technical Committee CEN / TC 348 Facility Management was established to develop a European standard for facility management. The Commission cooperated with the national standardization bodies, which were also its members. The process of the standard formation lasted three years. The standard

was approved in September 2006. European Facility Management Standard covers the operational, tactical and strategic level of services provided for support activities of the primary process. Its goal is to improve competitiveness on the European market, improve the efficiency of primary facility management and its processes, improve transparency in tendering procedures, improve the quality of outputs and develop new support programs and systems. The Technical Committee selected two main themes in the creation of the facility management standard. Standardization in terminology and definitions of the facility management. The goal was to establish relevant terms and definitions for facility management and to define specific terms that should be used in contracts between the providers of facility management services and facility management clients. (Vyskočil, 2011) The priority objective of the standard in this area was to focus on the scope of the facility management services and identify procurement choices as well as to promote mutual trade between companies in different countries within the European market and to establish a clear link between the client and the supplier of the facility management.

The benefits of the European facility management are economical and legislative. *Economical* benefits allow to communicate efficiently, clearly and accurately. A substantial reduction in the cost of supporting activities can be achieved. Costs are difficult to compare if the cost base is different for different businesses or organizations. However, if companies or organizations use the same classification and definitions, they can be compared easily. Standardization in the classification of the facility management costs and in definitions related to the facility management help improve market transparency. Companies prefer to receive offers meeting the European standards, as they have the ability to compare different businesses with different price offers. *Legislative* benefits present the introduction of the European facility management standard helps increase the standardization and transparency of public tendering, supply and purchase management of real estate market, business services sector and other means used in the field of the facility management.

### 3.1 Facility management in the European countries

In Europe, the facility management started to be used in 1990s of the twentieth century. The first countries were France, Great Britain, the Benelux and the Scandinavian countries. Approximately 5 years later, this term was spread to German-speaking countries. Each of these countries established its own association for the facility management. (Vyskočil, 2009) England was one of the first countries in Europe where a national branch of IFMA was established. It operates in companies that provide a wide range of facility management services. They focus on building management, asset management, spatial planning and design, maintenance, work safety, relocation for various organizations and cleaning services. (Vyskočil & Štrup, 2003; Agarwal & Paul, 2017)

Maliene et al. (2008) focus their survey on the development of the facility management in Europe. They find out, that for instance, in the case of France, there is no comprehensive concept of the facility management and the facility manager profession is not specifically described. The French facility management market is rather focused on providing real estate services, while the Italian facility management sector is characterized by innovation and dynamics, which includes a wide range of trade unions. In Hungary at the beginning of 1990, foreign investors, especially from Austria and France, organized the first transfer of knowledge about facility management to manage Hungarian buildings. It was a prerequisite to find the first Hungarian facility management association in 1991. Nowadays, the Hungarian facility management market is mainly focused on the provision of services.

Scandinavian countries use different definitions and forms of facility management depending on the organization and objectives of the country. Management and service organizations use their own definitions of the facility management in the area of marketing and promotion of their services on local markets, and typical tasks of the asset management are often included into the facility management services. Based on research can be claimed that each Scandinavian country has some peculiarities regarding the organization of the facility management which a cause of local laws and traditions. Norwegian facility management is the least developed of all Scandinavian countries and for many Norwegian companies the quality of service is much more important. Sweden has the second largest share of the facility management (Denmark is first in the ranking) depending on the degree of its development. During the past years was a significant development leap in the facility management. Many globally known organizations did not join the Finnish or Norwegian markets but merged with Swedish companies.

A few years later, facility management spread to surrounding countries. The first post-communist country where the facility management association was established, was Hungary, where in 1998 the National Union of Facility Managers (HUFMA) was formed. A little later in 2000, the Czech Republic joined IFMA (IFMA CZ). Today, IFMA has approximately 18,000 members in 60 countries around the world, with around 130 branches.

In the Czech Republic, the offer of separate, individually specialized services, such as protection, repair, cleaning, catering was promoted. But, in the course of time, suppliers who offered complex of facility services, appeared on the market. These supplies were rather closer to the partnership - integrated facility management than to a regular sale of services. Facility management, as a field, links to the history of the development of services of individual secondary activities. (Vyskočil et al., 2007)

Table 1: Development of the facility management

<b>Own sources</b>	<b>Contractual service</b>	<b>External sources</b>	<b>Integrated facility management</b>	<b>Infrastructural management</b>
1970 - 1980	1980 – 1990	1990 – 1995	1996 – 1998	2000 - present
cleaning	cleaning guarding catering maintenance land	contractual services + postal services telecommunication IT, print, FM administration	external services + training property project management consulting	capital suggestion construction equipment accounting integrated FM

Source: Vyskočil & Štrup, (2003).

Currently, the Czech Republic is in the third stage of the development (external sources). There are many suppliers on the market, who provide facility services in a high quality and at a favourable price level. Many companies offering facility services transform to companies providing integrated facility management. Companies prefer ordering a full service, but they do not require a unified data administration. (Somorová, 2006) The results is that providers can modify these data to meet their requirements. When the facility management moves to a higher level, it is clear that the facility management provider begins to cooperate with the facility manager of the business and thus they form a team that can provide strategic information at any time, which helps to shift to next level of the provider of the complex facility management services. The company providing a complex of facility management services does not offer only the grouping of the given services, but it also cooperates with a team of well-established experts and facility managers. Firstly, the group of people assesses the current state of the company and then finds appropriate solutions and options for improvement. In addition, the



company providing the support services has technical facilities to carry out all the needed activities.

### **3.2 Facility management standards in Slovakia**

The concept of facility management was slowly coming to the awareness of the Slovak population due to a growing number of foreign companies and corporations on the market. These large companies bring to the Slovak market not only the capital, but also the managerial know-how of support services. In our conditions, the application of the facility management is quite demanding for several reasons. It is known that more than ten years ago the facility management began to be used in the Central European countries. It was a period of the global economic crisis, but according to statistics, relatively good results were achieved in the development of the facility management.

Considering the conditions in our country, the development of facility management is closely linked to the Slovak Institute of Technical Standardization which issued a new standard of STN EN 15221 Facility management in 2007. The standard consists of two parts: STN EN 15221-1 Terms and Definitions and STN EN 15221-2 Instructions for the preparation of management arrangements. Since then, the application of the European Standard STN EN 15221 Facility management in practice has enabled companies and organizations providing facility management services to increase their competitiveness on the domestic as well as on the European market, to streamline the primary and support processes and to improve the quality of the services provided. Using the standard allows organizations offering facility management services to increase their segment of the market presence. The new European standard permits organizations to trade internationally. A single European standard for facility management is an important factor for the future development of the facility management in the European Union. The Slovak Association of Facility Management (SAFM) was established in 2009. Its main idea is the introduction and support of the facility management in the process of decision-making and management at all corporate levels, strategic, tactical and operational. It also provides the exchange of practical experience and information among facility management specialists. Slovakia is one of the countries that is still lagging behind other European countries in the area of the facility management.

The reason of poor usage of this relatively new method of managing supporting activities is that it was presented with some time lag. It may be caused by the fact that both the owners and the tenants of the buildings do not have the requested amount money. Within the building management, only the most important cash resources are spent to provide the most necessary operational and building management administration.

However, the problem is a lack of cooperation between facility management and project management in the process of planning and design of buildings, industrial halls, complexes, production parks, etc. An important feature is also an unprofessional approach of the building operators in securing and managing the smooth running of the building, which is the result of low awareness and lack of commitment. We can also point to the fact that the constant change in the use of individual buildings leads to their deterioration, even in places with developed tourism. (Somorová, 2010)

Despite these facts, the use and application of the facility management in the Slovak market is growing remarkably. The most frequently used form of provision of facility management services is outsourcing. (Vetrakova et al., 2013) Practical utilization and application of outsourcing is frequent and very popular in many industries of all developed countries as it

brings a lot of positive effects. In our country it is used by large and important companies, such as Johnson Controls International, KIA Slovakia, COFELA, but also some banks (Tatrabanka, VUB Bank) and many other business and entertainment centres.

Outsourcing facility management or a complex of facility management services is also used by various state administration bodies, such as the Ministry of the Interior of the Slovak Republic or the Tax Directorate, but also cities and municipalities.

One of the business process outsourcing leaders (BPO), operating on the Slovak market, are the service centres of a large number of companies from the USA and Western European countries. The largest providers, employing several hundred employees, are: IBM - Service Centre, Accenture - IT Support, procurement outsourcing, financial accounting, Dell - taxation, financial accounting, analysis, information support, sales service, AT & T – telecommunication, Siemenes, Lenovo and Slovak Telecom. In Slovakia, business process outsourcing providers gather mainly in Bratislava, which offers, besides a large number of foreign-speaking university graduates, a huge number of companies, businesses and offices, as well, most of the organizations that benefit from the facility management facility located in our capital. (Kang & Hong, 2015)

Establishment of the facility management is an effective way of activities ensuring (user comfort, better processes, costs decrease, etc.) for a user who can devote to the core activities of their business. Thus, the benefit of facility management can be summarized: reduction of operating costs, competitive advantage; establishment of support processes by one agent of facility management; modification of the organizational structure, new possibilities of the building using; greater awareness of top management; improvement of the overview about the processes in the company and their control, as well as of the working environment quality. (Akgun et al., 2015; Jylha & Suvanto, 2015)

Sound management of organizational resources improves the overall efficiency of organization. From the perspective of facility management, it means to deal with the optimal allocation of available resources, which are mostly used when setting up supporting processes in organization. (Kral & Bartosova, 2016) The maturity of facility management over the past 35 years indicates time for more connection between research finding and their adoption into practice. (Roper, 2017)

#### **4. Conclusion**

The facility management is a field that develops very dynamically, as evidenced by the growing number of companies focused on the facility management. Present results persuade more and more companies to leave all support services to professionals so they can only deal with their core business activities.

The trend of the last years is that clients do not use services of small local businesses that are only able to offer partial facility management services. Companies are turning to big suppliers who provide all the services anywhere in the whole country.

Based on the experience of many experts, up to 90% of manufacturing companies using outsourcing support services have almost every service from another supplier. But, letting the more services to the single supplier brings the greatest savings.

Currently, the most common situation is when companies implement facility management in their full operation. Facility manager takes over the support services from current suppliers

and optimizes their functions and economy. On the other hand, it is important for new projects to think about the operating costs already at the early stage of the project and invite the facility manager to work with the developer. The mutual collaboration with designers is very important because it influences the level of the costs in the future.

Facility management focuses on support activities which aim is to reduce costs, increase efficiency of management and improve quality. A company that completely transforms its processes can shift some functional area to an external organization, which conducts the activity at a professional level. Decision about using the outsourcing services or not is a subject of a detailed analysis of corporate activities in terms of its importance to society, as not all outsourcing activities may contribute to the overall efficiency of the business.

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# GLOBALIZATION OF SOCIO-ECONOMIC CONSEQUENCES IN ECONOMY AND ITS INFLUENCE ON BIFURCATION PROCESSES IN FINANCIAL SYSTEM

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**Abstract.** Today, many believe that the negative trends in the economies of countries are related to the global world socio-economic processes. However, from the point of view of synergism, this is an evolutionary process that must be considered as a process of bifurcation and creation in the socio-economic system. In the course of the global economic crisis, which has bifurcation processes, and consequently, a split of trajectory, there is a change in the nature of the functioning of the socio-economic system. For the situation to be predicted, neutralized or, on the contrary, created positive synergetic effects, it is crucially important to understand what they are based on, why such nonlinear effects appear in the economy. Thus, it is essential to distinguish the vector as a synergetic economic effect that has a huge impact on bifurcation processes in financial system. This vector is usually measured by the additional monetary incomes obtained as a result of an effective combination of monetary investments, from the point of view of increasing monetary capital, regardless of the actual efficiency of the process of social reproduction. In this regard, in the author's opinion, it seems promising to consider the patterns of the functioning of the financial system in the Russian Federation from the point of view of a synergetic approach to the formation of financial potential, which manifests itself through the functioning of the financial market and its impact on the financial and banking system at the level of the Russian Federation.

**Keywords:** globalization of socio-economic processes, financial potential, synergetic approach, bifurcation process, credit and banking system

**JEL Classification:** E51, E5, C22, G17, G01

## 1. Introduction

The globalization of the world crisis as a purely economic phenomenon affects all spheres of public life. Current events that took place in monetary field allowed us to regard this problem from different perspectives. Therefore, linear approaches that went without profound changes and manifestations of any crises in the financial sphere, all these years forced, on the other hand, to look at non-linear processes. It turned out that methods of prediction that are intrinsic for classic economic theory no longer work. Then we come across the problem about what to do and how to identify non-linear processes in a financial realm.

The problem is quite wide and complex, and this article is supposed to consider theoretical approaches of the synergism in the formation of any region's financial potential.

### **1.1 Main part. The globalization of socio-economic consequences in economy and its influence on bifurcation processes in financial system.**

During the course of global economic crisis that has bifurcation processes, split trajectory, the nature of the socio-economic system and impact of each factor on formation of region's financial potential create an effect that qualitatively exceeds the influence of each separate factor participating in any economic process. In order to make the situation predicted, neutrolized or vice versa it would create some positive synergetic effects it is important to understand what lies on their basis and why such non-linear effects appear in economy. This question is considered by the synergetic economy.

There are many factors that can be treated as economic growth determinants. One of these factors is the financial system. The institutional framework of the financial system as well as its performance are no doubt important determinants of output growth. The theoretical structural model implies that both the development and stability of the financial sector have a positive impact on economic growth. However, when verifying this hypothesis on the basis of empirical data for real economies, some questions appear. The problems regarding the relationship between the financial sector and economic growth strengthened after the last global crisis and the crisis in the euro zone. It turns out that some disturbances observed in the financial sphere of the economy may exert very significant and long-term impact on the behavior of the real economy. The discussion of these issues is by no way closed. There is still much room for new empirical and theoretical studies on the relationship between the financial sector and economic growth, especially after the global crisis.

An efficient and effective banking system and financial markets create a positive impact on the overall wealth of society, by providing the advantageous flow of financial means accessibility in any given time. This contributes to the rise of consumption levels and subsequently production rates and economy effectiveness. (Mishkin, 2002) Scientific publications also indicate that the economic development is one of the most important deep determinants of economic growth. (Marcinkowska et al., 2014)

While setting up the econometric models aimed at confirmation of one of the above mentioned views, it is important to clearly differentiate causal relationship of variables and statistical correlation. Variables, even though often correlated, are not linked by causality. A separate issue is whether the economic growth is treated as a dependent variable. Both approaches find confirmation in the theory of economic thought. Arestis & Demetriades (1997) pay attention to the fact that while researching causality between the financial system and the economic growth, one faces methodological challenges that sometimes make it impossible to identify these relationships. There are also problems with availability of statistical data. Based on the analysis of scientific publications, it can be stated that it is not possible to give an unambiguous answer to the question whether interrelations between the financial system development and economic growth are of unidirectional character (if so, then which way) or bidirectional. Existing empirical research confirms different theoretical approaches in this area. (see: Shan et al. 2001; AbuBader & Abu-Qarn2008; Shan 2005; Blanco 2009; Esso 2010; Hassan et al. 2011)

Many financial phenomena, in other words non-linear processes, can be calculated with the mathematical modeling. Thus, the authors Zhang & Shang (2017) suggest «research the stock closing price series from different data that consist of six indices: three US stock indices and three Chinese stock indices during different periods, N-n,N-r can quantify the changes of

complexity for stock market data. Moreover, we get richer information from N-n, N-r and obtain some properties about the differences between the US and Chinese stock indices.

The authors conducted intensive studies of scientists and practitioners on models for forecasting bankruptcy events and defaults for credit risk management. Seminal academic research evaluated bankruptcy using traditional statistical methods (for example, discriminant analysis and logistic regression) and early models of artificial intelligence (eg, artificial neural networks). In this study, we test the machine learning model (vector support machines, package packages, increasing and random forests) to predict bankruptcy one year before in the case, and compare our results with the results of discriminant analysis, logistic regression and neural networks. (Barboza et al., 2017)

Such authors as Zhiyong et al. (2017) emphasize that lenders, such as banks, often use expert systems to support their decisions, when issuing loans and credit rating have been an important field of application of machine learning methods for decades. In practice, banks are often required to provide justification for their decisions, in addition to the ability to predict the performance of companies when assessing corporate loan applicants. One solution is to use the Envelopment Analysis Data (DEA) to evaluate multiple decision units (DMUs or companies) that are ranked according to best practices in their industrial sector. The linear programming algorithm is used to calculate corporate performance as a measure to distinguish healthy companies from those in a financial disaster. This is the latest article added to the shopping cart.

Moreover, it is necessary to take into account the approach to the study of synergetic effect that was conducted by Andrasik & Krempasky (2002) in economy. This may mean that evolutionary economic systems may also seek to create such chaotic regimes. This conclusion can explain why economic fluctuations bear on the whole the signs of chaotic dynamics, and the fact that the system of evolutionary Lorentz equations is characterized by some universality, as their validity manifested itself in different systems qualitatively different from each other. In the last 10-15 years in the scientific and specialized literature, various applications of chaotic dynamics for economic puzzles have been discovered.

Thus, systematic approach in studying the synergetic effect exemplifies a variety of mathematical models that can be considered as alternative ways for the development of financial system. These ways are formed at the points of bifurcation where the attractors act as a target. Measured by the additional monetary incomes obtained as a result of an effective combination of monetary investments, from the point of view of increasing money capital, regardless of the actual efficiency of the process of social reproduction, on the contrary, the real synergetic economic effect, although determined in monetary form, is measured taking into account the correlation between the real result and real costs, which implies the use of unsatisfactory prices in the calculations and minimum monetary estimates to objectively determined basis of prices. Therefore, the synergism as a process of self-organization for complicated systems can change over different time periods in order to find a point of bifurcation (bifurcation or even multiplicity of trajectories for development and a spontaneous choice of trajectories for development and changes of trajectory for development and vector of improvement. This vector is aimed at a particular attractor or attraction of plurality that provides dynamic balance during a specific period of time.

## **2. Impact of financial, tax and investment factors on formation of region's financial potential**

This theoretical approach can contribute to the change of such factors as financial, tax and investment factors. They are immediately connected with financial and credit relations that influence the formation of region's financial potential. All mentioned factors are the systems that are able to be self-organised. These factors are equally related to all subjects of market.

We start with financial and credit system. It will be useful to present one example from the Central Bank's activity. This bank should be guided in its policy by such tasks as ensuring the availability of credit for the real sector of the economy, targeting inflation and also maintenance of sufficient liquidity for a banking system and preventing a high level of national currency volatility.

At first sight, these tasks seem to be mutually exclusive. However, the Central Bank executes its functions in various regimes or systematic situations while each of them can be expressed as a specific system of priorities and obeys its own laws. The transition of the Central Bank from one mode to another mode and that of banking system from one situation of the system to another situation in case of deterioration of dynamic balance is possible without intermediate states.

In other words, there are simultaneously several modes in the "neighborhoods" of non-linear development, that is, all these system states form a single complex structure that is in dynamic equilibrium.

We can regard another example, expectations of national currency's devaluation will bring about an increase in odds in interest rates on assets denominated in national and foreign currencies. If economic difficulties and numerous hardships are expected, investors will also withdraw funds from sovereign debt instruments and possibly from domestic stock exchanges, which will be reflected in an increase in spreads on instruments such as Brady bonds and falling stock prices.

In this case it is easier to characterize dynamics of monetary system not in terms of separate countries and states (transition from one state to another one) but in course of collaboration (synergism) states of different complexity. For instance, from a simple level that includes maximum just one absolutely probable systematic state to levels of a high degree of complexity (more than two states of the system), transitions between them (and, consequently, between the systems «control laws» and structural parameters are often not deduced from «accumulated attributes»).

In the stock, as well as the foreign exchange market, the actions of a participant directly change the market situation, that is, the degree of the process's reflectivity is much higher in this case. It leads to the conclusion about that, for instance, increasing the level of economy's monetization requires us to take into account not only objective factors such as GDP (gross domestic product), decreasing inflation, development banking retailing business and so on. Besides, we should pay our attention to the fact that crucially important subjective (reflecting) factors such as trust of population and enterprises to national money, to the policy of the Central Bank and the banking system in general.

The issues of efficiency and development of the Internet banking were highlighted in the Internet Banking Rank 2017, which is the sixth edition of the annual survey of online banking efficiency for individuals, carried out by the analytical agency Marksw Webb Rank & Report. It



includes the study of 36 systems of the Internet banking operating in Russia and an online survey of more than 3,000 Russian Internet users. (Laforet, S and Li, X., 2005) Internet banking has significantly changed its industry with respect to the use of channels, especially among youth. (Mols, 1999)

Another interesting approach is the approach of R. Jain who states that the "... policy makers in developing countries are increasingly focusing on national broadband plans (NBPs)". For example, politicians in India understand that broadband can accelerate the increasing contribution to those services and knowledge sectors of the economy of India, and also help to alleviate its poor delivery of physical services in such areas as health, education, banking, etc. This article documents the development in the Indian NBP. Based on previous studies, the main factors contributing to the success in the deployment and adoption of broadband were determined and estimation of the Indian NBP was performed. (Sanli et al., 2015)

In other words, monetary multiplier chiefly has reflexive character: the more trust monetary system and policy deserve, the more efficiently national money can perform all its functions, first of all, the function of accumulation. (Rumyantseva, 2013).

It is essential to remember that financial capital is considered to be the capital of huge quantities of direct investments that form the strategy for economic growth in a shape of quantum created by collaboration of macroobjects.

This way illustrates how hierarchy of markets is formed and not on the principles of a monopoly of one type or another, but as a result of the structural and institutional interaction of markets and their self-organization. Consequently, numerous segments of dynamic market potential are regarded as specialised markets that produce in their own interaction not unity in general, but a tangible entire system of monetary investments of the country. (Evstigneeva et al., 2010)

As far as region's tax potential is concerned, it is necessary to draw our attention to multi-vector model of tax system that includes a sharp reduction in the number of inefficient taxes, as well as the replacement of the profit tax with the expense tax.

We ought to take into account the theoretical justification for the provisions that the taxation of expenditure is more preferable from the point of view of economic efficiency, equity and administration than the taxation of profits and incomes. Moreover, progressive taxation of individuals' and companies' incomes discourage them to work more and better. To be very honest we need to confess the fact that this type of taxation makes people and corporations in essence «punished» for improving the efficiency of management. Therefore, it may be more reasonable to replace the principle of taxation «more produce, more pay» with a cost-effective principle «more taxes are paid by those who have more and consume». Thus, it is sensible to switch from the taxation of profit (income) to the taxation of expenses, which will make the tax system multi-vector in nature, when the artificial minimization of one tax will cause the growth of another or other taxes. Speaking about positive sides of diversification of taxation, it is proposed to call off all ineffective and pointless taxes (total number of taxes that should be used is equal to 20), to replace the tax of profit with the tax of expenditure, to decrease the rates of value added tax. But the most important is to decrease the rates of single social tax with simultaneous cancellation of regressive scale in order of calculation of the last tax. It is supposed that only 5 taxes (value added tax, tax of expenditure, corporate property tax, single social tax and tax of individuals' incomes) will be imposed on a regular basis while others depending on character of entrepreneurial activity (for instance, when the production of

excisable goods, conducting entrepreneurial activities in the field of mining, the presence of sources of pollution, when using objects of wildlife and aquatic bioresources, etc.

Proposed construction of tax system and cancellation of income tax will legitimate sources of financing extended reproduction for the reason of the lack of motives for concealing profits. Taking into account this specific situation, the intention of being reluctant not to pay 10% interest expense on acquisition of fixed assets will compel a taxpayer to timely start exploiting fixed assets and in special situations to register taxpayer's rights in proper registration authorities. We should understand that from this moment a taxpayer will have the opportunity to reduce value added tax on the amount of tax deduction in terms of acquired fixed assets and the need to pay only 2 percent property tax. Therefore, we observe the positive sides of diversification in taxation: on one hand, an entity gets an incentive to the extension of production, on the other hand, multidirectionality of taxes forces taxpayers to pay current taxes in a proper way. In this case synergism of tax system takes place when interests of business coincide with budget interests.

Countries with weak main economic indicators but with high level of liquidity will not occupy first positions for a long time, and, vice versa, countries that have relatively low level of liquidity and stable economy's development and measures, which are exposed to speculative attacks from «not informed investors», will be less probable and they may protect themselves.

Such system of warning in conditions of practice works as a model that is based on data and time periods that they were created for (efficiency within the sample), and on the basis of data or a period they were crafted for (efficiency beyond the sample). For example, the probability of currency crisis increases if a real exchange rate is overestimated relatively to the trend, and the ratio of money supply M2 to reserves is large. A high level of ratio of short term debt to reserves will likely lead to the increase of crisis probability. There is information that emphasizes the importance of other variables such as the growth of export, the size of the state budget deficit and stake of direct foreign investments in external debt.

### 3. Conclusion

Hence, it is crucially essential to lay the emphasis on that fact about that synergetic approach to the formation of region's financial potential enables us to see changes not only in institutional and structural shifts with a certain sets of factors but also certain development in each vector, which in turn can also be changed in statistical and dynamic trajectories.

We have conducted a systematic analysis connected with systems of early warning that is regarded as a comparative innovation with an accurate task of predicting crisis. It is necessary to pay attention to the fact that it takes efforts to identify events which can cause crisis including interaction of economic, political and psychological factors.

Using systems of early warning should be an element of much wider analysis that takes into account all substantial and complex moments, some of which inevitably have to be ignored by statistical models created for different countries.

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## AN ASSESSMENT OF CSR DISCLOSURE IN EU COUNTRIES

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**Abstract.** Due to the accelerating globalization, nowadays companies face a growing number of requirements of community, government, trade unions, employees, suppliers and other stakeholders'. While fulfilling these requirements companies have formed their social responsibility policies, practices and reports. The paper focuses on the assessment of CSR disclosure in EU countries. According to the EU directive (Directive of the European Parliament, 2014) all major companies in EU should disclose in their management report relevant and useful information on their policies, main risks and outcomes relating to at least environmental matters, social and employee aspects, respect for human rights, anticorruption and bribery issues, diversity in their board of directors. To analyse the CSR disclosure in EU countries, the content analyses method was used during 2014-2016 period. The CSR reports were taken from Global compact database. As the study showed there is significant flexibility for companies to disclose relevant information (including reporting in a separate report), as well as they may rely on international, European or national guidelines (UN Global Compact, the OECD Guidelines for Multinational Enterprises, ISO 26000, EMAS, GRI). Although many companies disclosed their CSR activities, the level of disclosures are still low and differs within EU Countries. Most of the companies uses different CSR disclosure methodologies and differently disclose the aspects of CSR.

**Keywords:** CSR, CSR disclosure, nonfinancial information

**JEL Classification:** M40, L20, M14, O52

### 1. Introduction

As business can no longer ignore social and environmental problems, social responsibility is becoming an increasingly important part of business strategy. It has become clear that profit making alone will not ensure the success of a company, and more and more corporate executives engage in socially responsible activities that bring benefits not only to the environment, but also for the company itself. The issue of social responsibility disclosure became especially relevant, as in 2016, a new EU directive came into force. (Directive of the European Parliament, 2014) Directive aims to increase the transparency of companies by disclosing additional non-financial information related to environmental protection, social responsibility and management. According to this directive, all public interest companies in EU and their groups with 500 and more employees will be entitled to this directive. Non-financial information or otherwise disclosure of corporate social responsibility is the reporting of information related to environmental protection, human rights, ethics, consumer expectations

and stakeholder cooperation. (Communication from the Commission to the European Parliament, 2011)

The disclosure of corporate social responsibility so far has been investigated in various directions. Schreck (2013) and Dhaliwal et al. (2012) found that the issuance of stand-alone CSR reports is associated with lower analyst forecast error. This relationship is stronger in countries that are more stakeholder-oriented i.e., in countries where CSR performance is more likely to affect firm financial performance. This suggests that non-disclosure is likely due to immateriality. Cho et al. (2012) differentiated the choice to disclose across voluntary disclosure theory and legitimacy theory arguments. Their findings showed that disclosing firms do not exhibit improved subsequent environmental performance relative to non-disclosing companies. Furthermore, they found that the choice to disclose is associated with worse environmental performance. Cho et al. (2015) also investigated the breadth of CSR disclosure. Their research showed that the breadth of CSR disclosure increased significantly, with respect to both environmental and social information provision. However, the research focusing on non-financial information disclosure proves that industry factor is less meaningful related to differences in reporting, but only for the weighted disclosure score.

Others indicate that there are crucial differences between the scope and determinants of CSR disclosure in developed and developing countries. (Reverte, 2008; Gamerschlag et al., 2010; Ali et al., 2017) As some authors argue, the low level of company compliance with requirements of non-financial information is due to a lack of normativity. (Bebbington et al., 2012) Normativity is understood as the degree to which actors see rules as binding. (Chauvey et al., 2014) As previous research showed, the formal legislation is not efficient of creating a norm, but the outside actors, as accounting organizations through non-financial reporting awards is able to foster higher level of non-financial reporting. (Bebbington et al., 2012; Steurer et al., 2012)

## **2. CSR disclosure methodologies**

According to the EU directive (Directive of the European Parliament), large enterprises and their groups will have to disclose nonfinancial information using one of those recommended methodologies: Environmental management and audit system (EMAS), United Nations Global Compact, Global Reporting Initiative (GRI), Basic principles of business and human rights, OECD Guidelines for Multinational Enterprises, ISO 26000: 2010.

In accordance with Regulation (EC) No 1221/2009 of the European Parliament (2009), EMAS can be used on a voluntary basis by members of the Community and non-Community organizations. This control tool focuses on environmental issues and helps organizations to carry out activities whose harmfulness, from the environmental point of view, is reduced to the rules laid down by the regulation. The purpose of this system is to promote and ensure environmental efficiency improvement and evaluation, to provide information on the utility of the system through active cooperation with interested parties. This report only covers environmental accountability and does not provide recommendations for disclosure of corporate social responsibility in relation to other social activities.

The Global Compact is a strategic political initiative designed to help businesses adapt their actions and strategies to 10 universal principles that relate to human rights, the workforce, the environment and the fight against corruption. UN Global Compact Policy on Communicating Progress (2013) sets minimum requirements for business reporting. There are not many of them, and they more closely reflect the general nature of reporting requirements.

The GRI is an organization that encourages businesses to report on sustainability, thereby contributing to sustainable development. The mission of this initiative is to create a sustainability report standard that can be applied in practice by all companies and organizations. The Global Reporting Initiative is based on a reporting system that includes indicators and methods to identify and disclose the sustainability impact and effectiveness of the company. The system consists of reporting guidelines, sector-specific recommendations and other tools that help the organization to ensure transparency and accountability. (Sustainability Reporting Guidelines, 2011) The prepared report, based on GRI, makes companies more transparent, more focused on social issues, and therefore capable of providing comprehensive and full-fledged reports, thus contributing to the creation of a sustainable future.

According to the EU Directive (Directive of the European Parliament, 2014), corporate social responsibility reports will be available through the Business and Human Rights Principles implementing the UN Guiding Principles on Business and Human Rights (2011). This system seeks to provide a credible global standard to help prevent and address the unwanted risks associated with business operations in relation to human rights. According to the guidelines for the implementation of the Fundamental Principles of Business and Human Rights (UN Guiding Principles on Business and Human Rights, 2011), no corporate social reporting is foreseen, but it is mentioned that the company should indicate human rights information in its general report, which is usually provided in order to disclose social responsibility:

The Tripartite Declaration of Principles for Multinational Enterprises and Social Policy (International Labour Organization, 2017), places great emphasis on multinationals. In general, the entire declaration (International Labour Organization, 2017) is geared to addressing the work of multilateral enterprises. The declaration distinguishes the following main segments of the company's influence: employment, training, working and living conditions, industrial / industrial relations. The declaration (International Labour Organization, 2017) sets out specific requirements for each segment: actions and processes that ensure the development and maintenance of employee welfare both inside and outside the company. There is no identification of the methodology for disclosing such information, but it is emphasized that the company's activities in this area could be disclosed in the general corporate social responsibility report. It can be argued that the declaration helps to pay attention to employee well-being and does not create additional accountability.

OECD Guidelines for Multinational Enterprises (2011) are indicative and targeted at multinational companies and their boards. These guidelines are indicative and targeted at multinational companies and their boards. The guidelines outline in detail the following key areas: concept and principles, general policy, disclosure, human rights, employment, industrial relations, environment, combating bribery, consumer rights, science and technology, competition and taxation.

Contrary to other ISO standards, ISO 26000 (2010) is not a standardized standard. It makes recommendations, but not requirements. The standard helps companies familiarize themselves with CSR terms and definitions, methods, stakeholder engagement principles, CSR domains and the application of the principles set out in the standard for business. The ISO 26000 (2010) guidelines define the content of the report. The methodology raises very specific qualitative requirements for CSR reports. Their recommendations for content depend on the size of the company and its experience in CSR reporting (Tab. 1).

Table 1: CSR disclosure methodologies comparison

Requirements Methodology /	EMAS	Global Compact	GR I	Principles on Business and Human Rights	Tripartite Declaration of Principles	OECD	ISO 26000
Environmental protection	X	X	X			X	
Social and personnel issues		X	X	X	X	X	X
Respect for human rights		X	X	X	X	X	X
Fighting against corruption and bribery		X	X			X	X
Non-financial performance key indicators	X	X	X	X		X	X
CSR strategy, policy, results, risk description and management		X	X			X	X
Brief description of the business model	X		X				
Notes on amounts in the financial statements		X	X			X	X

Source: Authors calculations based on analysed literature

Thus, most of the corporate social responsibility disclosure methodologies provided by the EU Directive are more conducive to complementary reporting functions; provide business guidance on how to implement one or other area of corporate social responsibility, and how this is reflected in the reporting. The basis of all the reported methodologies is GRI. This methodology is described in detail, even on-line educational reporting videos for companies that are going to be interested in GRI reporting, and it is very important that the report cover all corporate social responsibility reporting areas.

### 3. Data and methodology

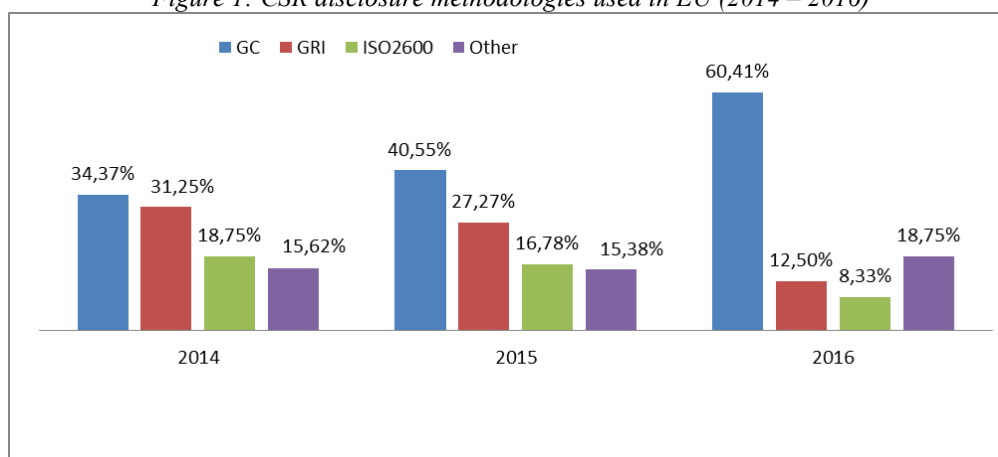
To analyse the CSR disclosure in EU countries, the content analyses method was used during 2014-2016 period. The research excluded these EU countries: Austria, Estonia, Ireland, Cyprus, Latvia, Luxembourg, Malta, Portugal, Slovakia, Slovenia, and Bulgaria, as they did not provide any reports for the analysed period. The CSR reports were taken from Global compact database, as this database is the major base for voluntary CSR disclosure. During the analysed period, 303 CSR reports were gathered and analysed. The content analysis is a method, which codifies written text into different categories based on selected criteria. The importance of the subject is measured as the frequency of the selected criteria. (Shelley & Krippendorff, 1984) Based on the previous literature the content analysis is a valid method for CSR reporting research, thus allowing to assess the extent of various items' disclosure. (Brown & Deegan, 1998; Deegan, 2002; Guthrie & Parker, 1989; Beck et al., 2010)

The content analysis is based on a certain consistency: 1) the question of research is firstly revealed; 2) the criteria for the investigated phenomenon are selected; 3) the frequency of repetition of categories in the report texts is calculated. Based on the EU directive (Directive of the European Parliament) we identified three categories of CSR disclosure for our analysis. These are (1) environment (2) social (3) economic and more detail on what aspects of disclosure each category represents.

## 4. Results and discussion

The results of the research revealed that in the majority of the EU's non-financial reporting, dominates three (GC, GRI, ISO26000) of the seven methodologies referred to the above-mentioned directive, disclosing social and environmental activities (Fig. 1). During the reporting period, CSR reporting to the UN has increased in line with the methodology set out in Directive of the European Parliament (2014). This number ranged between 81.25% and 84.37% of all reports during the research period. The remaining part of the reports was prepared according to unidentified and non-directive methodologies. It is important to note that the most popular methodologies used in the reports are GC (Global Compact 10 principles) and GRI.

Figure 1: CSR disclosure methodologies used in EU (2014 – 2016)



Source: elaborated by authors

Economy sector analyses showed that food and beverages (38.57%), industry and transport (35.84%), financial services (35.39%) and travel and leisure goods (33.8%) are one of the most revealing CSR activities sectors. It should be stressed that these sectors are directly related to customers, therefore, it is important not only to sell the product but also to gain the confidence of clients and stakeholders in the analyzed sectors. Therefore the above-mentioned sectors invest heavily in the activities of CSR. Furthermore based on the identified categories of CSR disclosure (Environment, Social, Economy) there is difference of which sector which category disclose more (Table 2). General construction (38.71%), construction and real estate (39.39%), software and computers (33.52%), industry and transport (41.47%), oil, fuel and other chemicals (29.57%) sectors are more likely to disclose environmental issues. However, telecommunications (36.36%), travel and leisure goods (45.45%), financial services (45.95%), food and beverages (52.27%) and media (36.36%) sectors tend to disclose more social issues in the non-financial reports. Thus, it can be assumed that this distribution is influenced by the activities of companies, since with industry, pollution-related companies try to disclose more social activities related to environmental protection, because they are relevant to them. This division of CSR disclosure between sectors confirms the results of a previous study (Cho et al., 2012, Wanderley et al., 2008).

Table 2: CSR categories disclosure in economic sectors, EU, 2014

Sector	Social	Economic	Environment
Production	103	57	117
Telecommunications	110	62	55
Construction and Real Estate	101	50	119
Software, Computers	95	71	102
Industry, transport	121	68	126



Oil, other chemical materials	87	80	90
Travel, leisure goods	138	66	110
Health care	69	12	63
Financial services	139	80	107
Food, beverages	158	99	96
Media	110	70	83
Electricity	99	33	94

Source: elaborated by authors

The analyses of separate CSR disclosure categories showed that human rights (67.98 %), social equality (53.46 %), professional equality (56.76 %), training and courses (54.79 %) and clean and safe working environment (46.53 %) are mostly disclosed issues in social category. Therefore, it can be assumed that it is important for companies to show that they are important in the field of human rights in general terms and that there is a tolerance in enterprises in the field of occupational gender equality when gender pay is not distributed. In economic category companies mostly disclose anticorruption (72.27 %), showing that EU companies do not tolerate bribery and are transparent about prices, fees and remuneration. As well as examining the EU corporate social responsibility in the economic field, it can be noted that the latter tend to reveal more about CSR investment and funds (27.83 %), education (31.95 %), employment (31.95 %), youth integration (27.83%) (indirect economic impact) than economic value increase (12.37%), financial risk management (14.43%), taxes (17.52%), efficiency (14.43%) and competition development (12.37%) (direct economic impact). Such results suggest that the analysis of socially responsible companies tends to reveal more to the CSR through indirect economic impact.

Thus, 43,590 large enterprises were registered in the European Union during the analysed year (2014). However, only 0.76% incorporated large companies submitted non-financial reports in 2014. Therefore, it can be assumed that since 2017, when European Union companies with more than 500 employees are required to submit separate reports on non-financial activities under the European Parliament and Council Directive (Directive of the European Parliament, 2014), the percentage of individual reporting is clearly low.

## 5. Conclusion

The results of the research revealed that the number of socially responsible enterprises in the EU is significantly low in the context of all EU companies. Nevertheless, the analysis of the CSR disclosure shows that in 2014-2016, the number of EU companies is increasing. The majority of the reports are prepared according three methodologies: GRI, Global Compact, ISO:26000.

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# GLOBAL STRATEGY OF THE EUROPEAN UNION

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**Abstract.** The European Union (EU) plays the important role of the world's economic development. The EU priority as a "Global Actor" is a specific question. It is so important for the EU, that it creates a part of EU general political goals, which are expressed in its documents. The documents are "Shared Vision, Common Action: A Stronger Europe – A Global Strategy for the EU's Foreign and Security Policy" from the year 2016 and "The Announcement on Process and Results of the Slovak Presidency of the Council of the EU" from the year 2017. The main goal of this paper is to focus (on the base of both documents) at selected components of the global dimension given which are: enforcement of a credible EU enlargement policy, strengthening of the EU foreign and security policy, deepening of the EU neighborhood policy, construction of the EU robust trade relations with the key world economies, EU development cooperation. With regard to the given goal we accumulate available theoretical sources at first from which we focused only at relevant information. We applied the following methods in dealing with selected information: we used the methods of analysis at the point of examining documents and five components of monitored priority. We used the methods of synthesis to be able the determined knowledge and connections resulting from analytic access in order to integrate them to a joined unit and we deduced the conclusion. The basic result of the paper collects the latest development in presented problems of active global involvement of the EU.

**Keywords:** selected components of the global dimension of the EU

**JEL Classification:** F6, F60, F68

## 1. Introduction

The actual function of the European Council itself is to establish the general political guidelines for the European Union Action. (Borchardt, 2010) The European Council at its session on 27<sup>th</sup> June 2014 in Brussels set out five priority areas outlining activities of the EU for the period of next five years. One of the priorities is „The European Union as a Global Actor“. Within the framework of this the EU has the task to engage strongly in particular in the following global issues: ensuring consistency between member states' and EU foreign policy goals, promoting stability, prosperity and democracy in the countries closest to the EU, engaging global partners on a wide range of issues such as trade, cyber security, human rights and crisis management and strengthening the EU's common security and defence policy. (Settings ..., 2014) The EU thus forms part of the complex process of globalization including the international relations in all relations of political, economic and social changes. We have dealt with this priority in two selected EU documents. The first document mentioned above was introduced by the High Representative of the EU for Foreign Affairs and Security Policy/vice-President of the European Commission Federica Mogherini. (Mogherini, 2016) The second

document “The Announcement on Process and Results of the Slovak Presidency of the Council of the EU” from the year 2017 evaluated the first Slovak Presidency in the Council of the EU that took place in the period between 1st July 2016 until 31st December 2016. (The Announcement ..., 2017)

## 2. Body of paper

As the main aim of this paper we have identified to focus on the selected parts of the priorities of global scale, which are: enforcement of a credible EU enlargement policy, strengthening of the EU foreign and security policy, deepening of the EU neighbourhood policy, construction of the EU robust trade relations with the key world economies, EU development cooperation. This contribution analyses the newest development in the mentioned five areas of global engagement of the European Union.

### 2.1 Enforcement of a credible EU enlargement policy

The current enlargement strategy of the EU in relation to the candidate countries is based on credibility of the EU itself, which follows from the adherence to the EU values, from the effectiveness and cohesion of EU policies, its unity, numerous success and its attractiveness and the influence of the EU towards outward, and is also based on the credibility of accession process, that is composed by clear, strict and fair conditions and accession criteria. The Slovak Presidency was enforcing the thorough and fair implementation of the principle of individual attitude to various states. It was seeking to ensure that the political enlargement of the EU and the effort to move further the accession negotiations with the candidate countries remain as the important part of the EU agenda. (The Future Enlargement ..., 2017) In short we will analyse these states: Macedonia, Montenegro, Serbia, Albania, Bosnia and a Herzegovina, Kosovo and Turkey. (De Munter, 2017)

The European Council granted **Macedonia** with the status of candidate country at its summit in Brussels in December 2005, nonetheless it did not set the date of starting the accession negotiations. Among the current barriers of valid membership ranks the reluctant attitude of Greece and Bulgaria. Greece is a long term opponent of the name of the state “Macedonia”, which is identical with the name of the northern part of Greece. The EU solves the problem by the temporary name Former Yugoslav Republic of Macedonia. The beginning of accession negotiations with Skopje is blocked also by Bulgaria, which does not recognize the Macedonian minority as the different ethnic group and requires the new agreement on the settlement of bilateral relations as the requirement for the withdrawal of its disagreement. The European Commission has been since 2009 recommending to open the negotiations. The European Council has been making this recommendation conditional upon the fulfilment of Przino Agreement of June 2015, that was signed by the representatives of four main political parties. The agreement has defined the conditions – to hold the free elections (they took place in December 2016), to support the work of special state representative and to perform urgent reform priorities.

**Montenegro** has declared its independence from Serbia in May 2006 and in 2008 it has asked for the entry into the EU. The negotiations on the Stabilization and Association Agreement between the EU and Montenegro were commenced in September 2006 and were accomplished in March 2007. It became the candidate state from December 2010 and the Accession negotiations started in June 2012. Montenegro had 20 opened chapters in January 2016. During the Slovak Presidency the major achievements were recorded in the Chapter 11:

Agriculture and Rural Development, and Chapter 19: Social Policy and Employment. During the Maltese Presidency the negotiations were opened Chapter 1: Free Movement of Goods, Chapter 22: Regional Policy and Coordination of Structural Instruments and negotiations were closed in Chapter 30: External Relations.

**Serbia** applied for its membership in the EU in December 2009. In March 2012 the European Council has granted it with the candidate status. In 2013 the Stabilization and Association Agreement between the EU and Serbia entered into force. The Accession negotiations were opened in January 2014. During the Slovak Presidency the progress has been achieved by opening of the Chapter 5: Public Procurement, Chapter 23: Judiciary and Fundamental Rights, Chapter 24: Justice, Freedom and Security and Chapter 25: Science and Research. During the Maltese Presidency the negotiations were opened on Chapter 20: Enterprise and Industrial Policy and Chapter 26: Education and Culture – this chapter was well prepared that enabled its closing.

**Albania** in the year 2010 asked for its accession to the EU. In the year 2012 the European Commission recommended the granting the status of candidate state with the reserve of accomplishment of key measures in the field of judiciary reform, the reform of public administration and the revision of parliamentary rules of procedure. The Albania achieved its candidate status in June 2014.

**Bosnia and Herzegovina** – in June 2003 the European Council granted Bosnia and Herzegovina the statute of the EU potential candidate state. The negotiations on the Stabilization and Association Agreement between the EU and Bosnia and Herzegovina started in November 2005. The Agreement was signed in June 2008 after the progress had been achieved in the field of reform of police, cooperation with the International Criminal Tribunal for the Former Yugoslavia, reform of public broadcasting and the reform of public administration. The agreement entered into force in June 2015. Bosnia and Herzegovina submitted its application for the membership in the EU in February 2016. The Council of the EU has in September 2016 invited Bosnia and Herzegovina to continue further ensuring the program of economic reforms and the reforms in the field of the state governed by the rule of law as well as improving the better functioning of public administration.

**Kosovo** declared its independence from Serbia in February 2008. Before the end of October 2013 the negotiations on the Stabilization and Association Agreement between the EU and Kosovo were commenced that were closed in May 2014. The Agreement was signed in October 2015 and entered into force in April 2016. Kosovo has at present the granted status of the potential candidate state of the EU. Kosovo in the process of European integration is obliged to fulfil the reforms, to normalize its relations with Pristina and Belgrade and to continue the dialogue with Serbia. Although Kosovo is not yet the member of the EU nor the Eurozone, since the year 2002 it uses euro as the official currency.

**Turkey** has asked for its membership in the European Communities already on 14th April 1987 and was declared as the candidate state in the year 1999. The EU became its negotiations with Turkey in October 2005. The year of entry and the date of closing the accession negotiations with Turkey was not specifically stipulated by the Union – it remained opened. In January 2016 Turkey had 15 opened chapters and one closed chapter. In June 2016 Chapter 33: Financial and Budgetary Provisions was opened. In relation to Turkey the Slovak Presidency maintained the open communication in order to support stabile and democratic development in the country. In connection with the attempted coup in July 2016 the European Parliament adopted its resolution in November 2016, where it called to suspend ongoing negotiations on

the accession with Turkey. In its further resolution of 6th July 2017 the European Parliament states that if the anticipated constitutional reforms are introduced and implemented unchanged, the accession process should be frozen. Members of the European Parliament inter alia condemned the repeatedly declared position of the Turkish President to re-introduce the death penalty, which would call into question the membership of Turkey in the Council of Europe and would lead to an immediate end of EU accession talks. (Turkey ..., 2017)

## **2.2 Strengthening of the EU foreign and security policy**

Common Foreign and Security Policy (CFSP) represents the overall framework for international and political activities of the EU. The EU will contribute to the Collective Security in a larger scale through following activities: 1. Security and Defence and Development of Common and Individual Accession to the Immigrants (Bédiová, Rašticová, Kucián, 2016), 2. Fight Against Terrorism, 3. Cybernetic Security, 4. Energetic Security, 5. Strategic Communication. The Slovak Presidency supported the further elaboration of political ambitions and priorities of global strategy for the CFSP in the field of strengthening of civil and military capacities and the defence cooperation, in the field of crisis management development and the effectiveness of missions and operations and it was also promoting the adoption of new strategic framework of the EU for the reform of security sector. It was also actively engaged in the strengthening of strategic cooperation between the EU and NATO that was also discussed during the informal meeting of ministers of defence of the EU Member States in Bratislava in September 2016. Among the most perspective areas of cooperation of the EU and NATO belongs the fight against hybrid threats and the area of building the resilience of partners.

## **2.3 Deepening of the EU neighbourhood policy**

The priority of the European Neighbourhood Policy (ENP) is to develop relations upon the principle of mutual interests and needs in relation to the Eastern Partnership that represents the regional initiative of the ENP. The Eastern Partnership was established in 2008 with the aim to intensify relations, deepen economic integration and speed up the process of political association between the EU and its eastern partners, which are: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. The ENP was designed as a set of common policy instruments, nonetheless the EU provides for the adaptation and differentiation of its policies according to the specificities of each partner and is open towards new kinds of relationships. The possibility to adapt the ENP is important as the EU neighbourhood is even more fragmented than ever before and the bilateral relationships of the EU with its neighbouring countries are in the various phases of their development. The goal of the Slovak Presidency in relation to the Eastern Partnership was the stabilization of its states in the political and security area, the continuing with the reforms, the implementation of association agreements and the progress in visa liberalization. The European Union develops its relations with the Eastern Partnership states also through the Association Agreements that were signed in 2014 with Georgia, Moldavia and Ukraine. The implementation of the Deep and Comprehensive Free Trade Area (DCFTA) forms their part since 2016. In the field of visa policy, the EU concluded the Agreement on Facilitation of the Issuance of Visas with Armenia in 2012, with Azerbaijan in 2014, Moldova got the visa free regime in 2014. With Belarus the negotiations on agreements on facilitation of visa regime started in 2014. During the Slovak Presidency the negotiation position was adopted in relation to the visa liberalization between the EU and Ukraine and Georgia. The European Parliament approved the regulation on the visa waiver with Ukraine on 6th April 2017. (EP Approves ..., 2017) The last formality was the Decision of the Council of the EU on visa-free regime for Ukrainian citizens since 11th May 2017. The Decision entered into force as of 11th June 2017,

that means from this date onwards the Ukrainian citizens can visit Schengen Zone Countries without visa. (Ukrainians ..., 2017)

In March 2017 the visa free regime entered into force between Georgia and the Schengen Zone countries. It relates to the Georgian citizens with biometric passports who want to travel for the period not exceeding 90 days in any 180-day period. Also Georgians from the occupied territories of provinces of South Ossetia and Abkhazia can travel visa free (however they need the Georgian passport to benefit from the visa waiver). (Gruzie, 2017)

## **2.4 Construction of the EU robust trade relations with the key world economies**

Another priority of the EU is the free, fair and balanced trade, based on the reciprocity and mutual benefits that is important for both internal and external stability of the EU. The EU forms part of the biggest world's trading block based on trade agreements with 140 partners around the world. (State of the Union Address, 2016) Another important moment for the trans-Atlantic trade of the EU was the signature of the Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada. (Grmelová, 2016) The Agreement was signed in October 2016 at the 16th EU-Canada Summit in Brussels after seven years of negotiations. The European Parliament approved the CETA agreement on 15th February 2017 and was provisionally effective in March 2017. Following most significant advantages could be pointed out as regards CETA Agreement (CETA, 2014): elimination of customs on both sides in more than 99 % tariff items; full liberalization of customs in industry; Canada and the EU liberalize approximately 93 % of items in agricultural sector; the area of non-tariff barriers strengthens even more the mutual contacts in the field of technical regulation; it is foreseen that almost half of the overall rise of Gross National Product will be oriented to trade with services; mutual bilateral trade with goods and services will be increased by 22,9 %; the rise of export of the EU to Canada is estimated to 24,3 % and Canadian export to the EU should be increased by 20,6 %; car industry – Canada committed to recognize 17 current international standards of UN/ECE in cars; in the field of sanitary and phytosanitary measures the CETA consolidates the current veterinary agreement between the EU and Canada and provides for the more predictable background for plant and plant product exporters from the EU; CETA brings mutual recognition of certificates of many products as well as provisions related to trade marks, designs and copyrights; the framework for the future mutual recognition of professional qualifications (for example architects, engineers, accountants) that will facilitate the access for the EU citizens at the Canadian market, new jobs, the mobility of jobs will be facilitated; CETA will remove or alleviate the investment obstacles at the horizontal level and in concrete sectors and will increase the legal certainty and predictability of investment environment (Nováčková et al., 2016); the European companies will be able to take part in the tenders in Canada; in the field of intellectual property CETA constitutes good results in the area of pharmaceuticals; CETA will settle the disputes between state and investor through the Investment Court System. Another main challenge of the EU trade policy has been negotiations between the European Union and the United States on the Transatlantic Trade and Investment Partnership (TTIP). The negotiations started in July 2013. (Vaníčková & Bílek, 2016) The European Commission negotiates with the US over TTIP on behalf of all EU member states. TTIP is proposed trade agreement with the aim of promoting trade and multilateral economic growth. The aim of TTIP is trade and investment liberalization. (Milošovičová & Stachová, 2016) A successful completion of the TTIP became questionable after the new President of the USA Donald Trump came to power.



## 2.5 Development cooperation

The globalization is connected with the various forms of the international cooperation. (Rosputinský, 2016) The development cooperation and the development strategy of the EU is aimed at the prosperity of the EU citizens. It has to be harmonized with the strategic priorities of the EU and flexible in the field of accessibility of limited financial means for the activities in the field – concretely for conflict prevention and the support of civil society. It requires the fulfilment of goals in the field of sustainable development around the world including Europe. (Czech, 2016) Within this meaning the ambition of the Slovak Presidency in the field of development cooperation was to strengthen the coherence between the development policies and the goal to solve the crises in a complex manner – including migration crisis. During the Slovak Presidency the proposal for a regulation of the European Parliament and the Council of EU on the European Fund for Sustainable Development (EFSD) was adopted in September 2016. The Council of the EU confirmed the final agreement with the European Parliament on the establishment of the EFSD on 28th June 2017 during the Maltese Presidency. The aim of the Fund is to solve the original reasons of illegal migration through creating the new jobs, support of investments and sustainable development in partner countries – especially in the countries of European neighbourhood and in Africa. The anticipated original budget of the fund in the amount of 3,35 billion EUR should mobilize investments as high as the amount of 44 billion EUR. It is expected that the new fund will generate the additional financial means in particular from the private sector. The fund will be managed by the European Commission in cooperation with the European Investment Bank. (EFSD, 2017)

## 3. Conclusion

The global engagement of the EU is the complex process being subject to various policies, activities and relationships, for instance the employment policy, social policy and economic relations in the state. (Bajžíková, 2016) The area of credible enlargement of the EU represents the strategic investment to the future and prosperity of the EU. There are joint challenges ahead of the EU in the area of the enlargement such as immigration, energy security, terrorism and organized crime. Internal and external security of the EU are more and more interconnected. The internal collective EU security means to promote peace and to ensure the security of citizens and territory of the EU. At the same time, it includes the interest in peace in neighbouring and adjacent regions, conflict prevention, support of human security and the solving the main causes of instability. The EU is thus contributing to the peaceful and sustainable environment and plays the significant role as the global guarantor of security. The strategic priority of the neighbouring policy of the EU is to support the resistance of states and societies wishing to build narrower relationships with the EU. Among the possibilities of building the firm relations with the EU ranks also the enlargement of trans-European networks, Energy Community, building the physical and digital connections and establishment of the Deep and Comprehensive Free Trade Area. The foreign trade is being attributed ever greater importance at present (Paškrťová, 2016), therefore the EU prosperity will be even more based on trade and investments. The growing intensity of trade signifies the increased openness and interconnection of economies and is considered as the most significant features of globalization. (Neumann, 2016) The EU depends on the strong internal market and the open international economic system, as well as from the free flow of information and global value chains that are enabled by the free and safe internet. The EU is interested to participate in the creation of global economic and environmental rules and in sustainable access to global joint sources through the open sea, land and cosmic routes. In accordance with the goals of the sustainable development

the EU strengthens the prosperity of its nationals by supporting the sustainable development, employment, equality, safe and healthy environment, strong internal trade, investments and open international economic system. The EU will develop the favourable environment also by development funds that have to act as the catalysts of strategic investments.

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## ECO-INNOVATION IN THE LIGHT OF GLOBALIZATION EFFORTS

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**Abstract.** Realisation of eco-innovation is a response to a human behaviour after the Industrial Revolution, when it began to regard natural resources as an unlimited way of realizing their own plans and business opportunities. Often a ruthless approach without environmentally friendly production and production process led to depletion of natural resources and devastation of the natural environment. This is currently reflected on its overall situation and we see the great efforts of states and individual policies to mitigate the situation. The implementation of eco-innovation is subject to national regional policies of the individual states. Over all these we can see organizations, eco-innovation policies of larger clusters such as the EU, various intergovernmental agreements or treaties that govern individual state policies. Eco-innovation efficiency is an important indicator of the national eco-innovation effort and its determination is important in the comparison of states. It also serves as a tool for efforts in increasing eco-innovation and reducing the environmental impacts of the industry, which may be more or less the result of globalization. The measurement of eco-innovations is carried out by establishing different indicators of eco-innovation efficiency. The individual metrics then compare the results of individual countries. The contribution deals with different eco-efficiency measurement metrics and their impact on the following eco-innovation performance of other countries. It draws conclusions of the impact of globalization efforts on realizing eco-innovation and mitigating the consequences of non-ecological behaviour and attitude over the last decades.

**Keywords:** globalization, eco-innovation, measuring eco-innovation.

**JEL Classification:** M31, O31, M10.

### 1. Introduction

At present, there are many methodologies for determining eco-innovation performance that have been developed by a number of organizations or platforms addressing the issue in the long-term as well as in the short term. Effective environmental and energy policies should be based on strong environmental indicators that penetrate both environmental and economic issues. (Tsai & Liao, 2017; Zhang & Walton, 2017) According to the United Nations, we know that creating a green growth concept for public policies requires measurement that would capture the structure of economic growth over time. Without indicators or conceptual frameworks to guide policy-makers, green growth as a paradigm shifting policymaking would be an elusive goal. Also, the European Environment Agency marked that environmental indicators are an essential tool for assessing environmental trends, monitoring progress against objectives and targets, evaluating policy effectiveness and communicating complex issues with non-technical audiences. (Beltrán-Esteve & Picazo-Tadeo, 2017)

Due to the increasing interest of society and politicians in sustainable growth, emerging scientific literature has been emerging in recent decades to explore the relationship between product and service production and the environment. (Kiefer, 2017) Eco-innovation, as the driving force of the economy and an indispensable element in the spectrum of activities leading to the improvement of the environment in a globalized economy, needs to be developed and monitored to see their broad reach and impact on individual economies. This paper therefore deals with a wide range of different indicators and their significance for creating an overall picture of the green growth of the countries. (Koehler et al., 2014; Duran-Romero & Urraca-Ruiz, 2015)

In this paper, we examine and discuss methods of measuring and comparison environmental innovations. We tried to find some correlation and dependence between some indicators. Before that, however, it is good to answer the question why it is important to deal with environmental innovations and their measurement? An important reason for this is the expected environmental benefit. The second reason is that in terms of rising cost of goods and waste management, the competitiveness of businesses as well as countries or regions is increasingly linked to their ability to 'eco-innovate'. (Arundel & Kemp, 2009) When measuring eco-innovation, not any single method or indicator is sufficient. In general, different methods for analyzing eco-innovations should instead be applied instead. In particular, more effort should be done direct measurement of innovative production using documentary and digital resources. The advantage is that they measure innovative production rather than input innovations (such as R & D) or outputs (for example, patent admission). (Loučanová et al., 2015) Innovation can also be measured indirectly by changes in resource efficiency and productivity. These two paths are underestimated and we should pay more attention to expand our very narrow knowledge base. (Horbach et al., 2012; Pujari, 2006; Kesidou & Demirel, 2012)

It is possible that the country will try to create favourable conditions for the emergence of systemic eco-innovation. It is important that a strong vision and awareness is a prerequisite for a clear strategy and goals to address societal challenges (macroeconomic indicators of eco-innovation) and strong support for sustainable consumption and production practices. (Miklenčičová & Čapkovičová, 2014) In addition, the general framework conditions (vacancy rates, business, innovation) are key factors in facilitating innovation as well as eco-innovation. Infrastructure and technology can be designed for systemic eco-innovation. Some greenbacks and tradable permits have recently been introduced in some markets as ecological measures. To realize their potential, eco-innovations will require measures to ensure that the whole the innovation cycle will be effective. (Olsson et al., 2014; Razvan & Kosuke, 2007; Rennings, 2000)

The assessment of eco-efficient performance within the European Union includes several attributes of implementing green innovations, according to which country-by-country ranking is subsequently established. (Hellstrom, 2007; Jansson, 2011)

The eco-innovation index also includes characteristics such as coverage of eco-innovations in electronic media / eco-innovation outputs /, eco-products export, and eco-industry turnover / socio-economic results category. Eco-innovation is about creating new business models that are not only competitive but also respecting negative environmental impacts by reducing resource use for product manufacturing. Ecological innovations are prospectively focused on complex improvements throughout the product's life cycle. This is not just about inventing new products and providing new services, but also reducing environmental impacts in the way products are designed, manufactured, used, reused and recycled. (www.aseic.org, 2013)

In our analysis, we focused on the comparison of important indicators of selected European Union countries. We decided to take into account the methodology of the Eco-Innovation Observatory and the results of their investigations. We also used other statistical data published by Eurostat (drawing on them from the Eco-Innovation Observatory when establishing the Eco-innovation Index).

## **2. Dependencies and relationships in the field of eco-innovation indicators**

Assessment of innovation performance in the European Union comprises several attributes of the implementation of green innovation. Eco-innovation index - Eco-innovation Scoreboard includes such characteristics as covering of the eco-innovation in the electronic media (category eco-innovation outputs), exports of eco-industries and turnover in eco-industry (category socio-economic outcomes). Eco-innovation is about creating new business models that are not only competitive, but also respect the negative impacts on the environment by reducing the use of resources for production in the globalised environment. Eco-innovation is a perspective focusing on comprehensive improvements throughout the product lifecycle. It does not just mean inventing new products and delivery of new services, but it also includes the reduction of environmental impact in the way products are designed, manufactured, used, reused and recycled. (www.aseic.org, 2013) In our analysis, we focused on comparison of important indicators of selected European Union countries. We decided to take into account the methodology of Eco-Innovation. We also used the additional statistical data published by Eurostat (profit from them the Eco-Innovation Observatory in determining the eco-innovation index). The indicators were compared and infer from these conclusions are based only on the evaluation of Eco-Innovation Observatory. For the best review and exploration of the relationship we have decided to use the selected economic indicators such as:

- GDP - gross domestic product,
- Total spending on research and development - Gross domestic expenditure on R & D (GERD).

Other indicators:

- Global Innovation Index (GII),
- Eco-innovation Index by EIO and ASEIC,
- Human resources in science and technology.

The indicators that we compared and draw conclusions from them are based not only on the Eco-Innovation Observatory, but we also decided to use selected indicators of economic development such as:

- GDP - Gross Domestic Product,
- Total R & D expenditure - Gross domestic expenditure on R & D (also as GERD).

Other indicators that we have taken into account are:

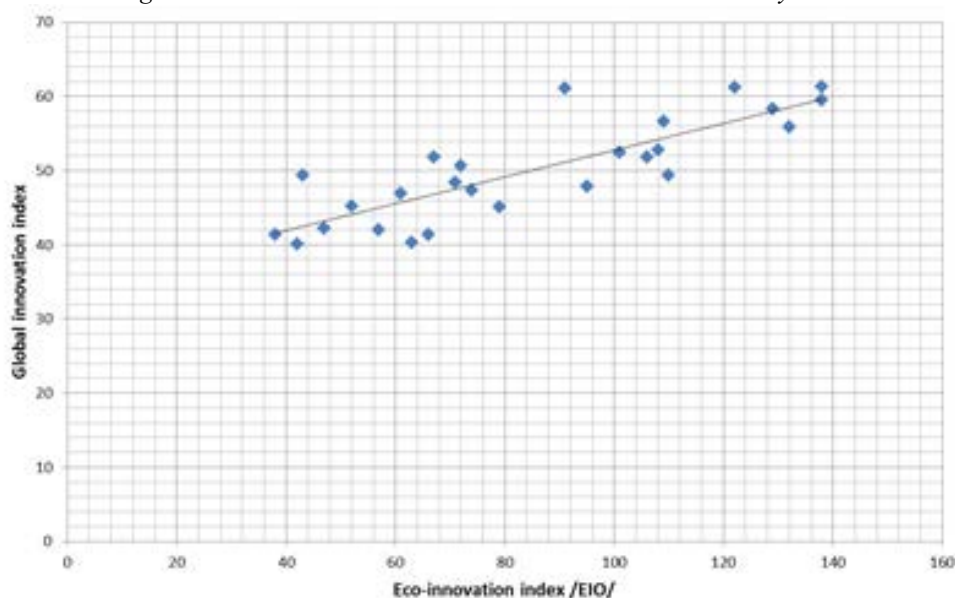
- Global Innovation Index (GII),
- EIO and ASEIC eco-innovation index,
- Human resources in science and technology.

Selected analyses are further:

## 2.1. Innovation Index – Eco-innovation Index

Innovation Index is a global index that arises on the basis of several criteria, which include our chosen criteria. We investigated and statistically confirmed whether there is a relationship between innovative and eco-innovative activities of the state. We tried to find a correlation between innovation and Eco-innovation Index of the country. There are several methodologies for the evaluation of innovation performance. We decided for the Global Innovation Index (GII). The value of Global Innovation Index of selected countries. (globalinnovationindex.org, 2016) We have selected the same countries as in Eco-innovation Index.

Figure 1: Global Innovation Index vs. Eco-innovation Index by EIO



Source: Own processing

The value of the correlation coefficient was  $r = 0.833366$ .

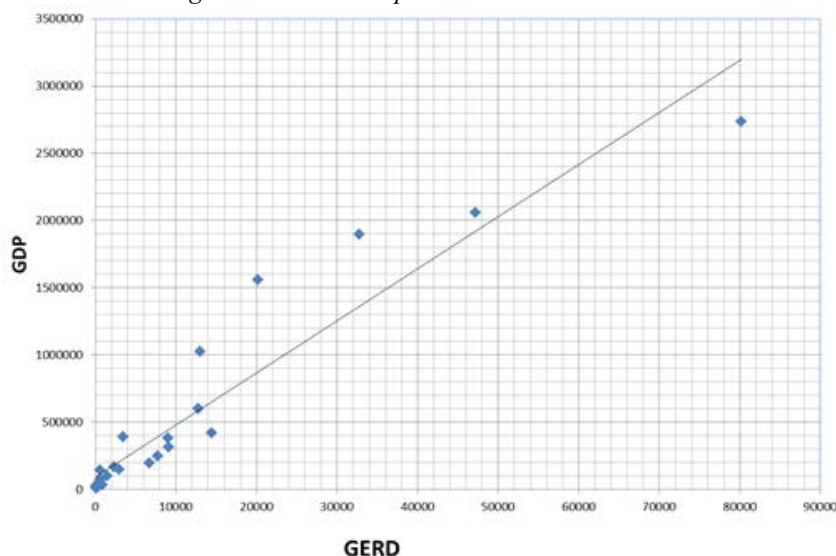
If  $0.7 \leq |r| < 0.9$  there is a correlation between the two examined features of selected entities (countries) - in our case, strong positive association between Eco-innovation and Global Innovation Index, an index of selected countries.

On this basis, we can conclude that between the Innovation Index and Eco-innovation Indices of the selected countries. There is an interdependence - binding, which reflects that the levels of countries are interrelated. The eco-innovation performance is related to the overall innovation performance of the state. Intensity of R & D has increased in most Member States between 2008 and 2015. The main reason was the slowdown in GDP growth coupled with an increase in nominal government spending on research and development in many EU countries. However, in the countries with a very high R & D intensity level (Sweden and Finland), moderate levels (Luxembourg and Portugal) and very low levels (Croatia and Romania) have suffered negative R & D expenditure trends over this period. It should be noted that Finland was the leader in R & D intensity in 2008, but its expenditure fell to below 3% of GDP in 2015. As noted in the European Commission's report on R & D performance in the EU, negative trends, Finland and Sweden could partly attribute difficulties in the ICT sector. The growth of R & D spending between 2008 and 2015 was most pronounced in some economies in Central and Eastern Europe, which generally have low expenditures like Slovakia and the Czech Republic.

## 2.2 GDP - GERD

We tried to find some relations between these indicators. We used Eurostat data (appsso.eurostat.ec.europa.eu, 2014) from statistical surveys which refers to the amount of funds that the states spent on research and development. We tried to determine whether there is a relationship between the level of GDP and the amount that each state has committed to science and research. Based on the correlation analysis we can conclude that there is a significant correlation between GDP and expenditure on science and research (GERD) of the selected countries -  $r = 0.948459969$ .

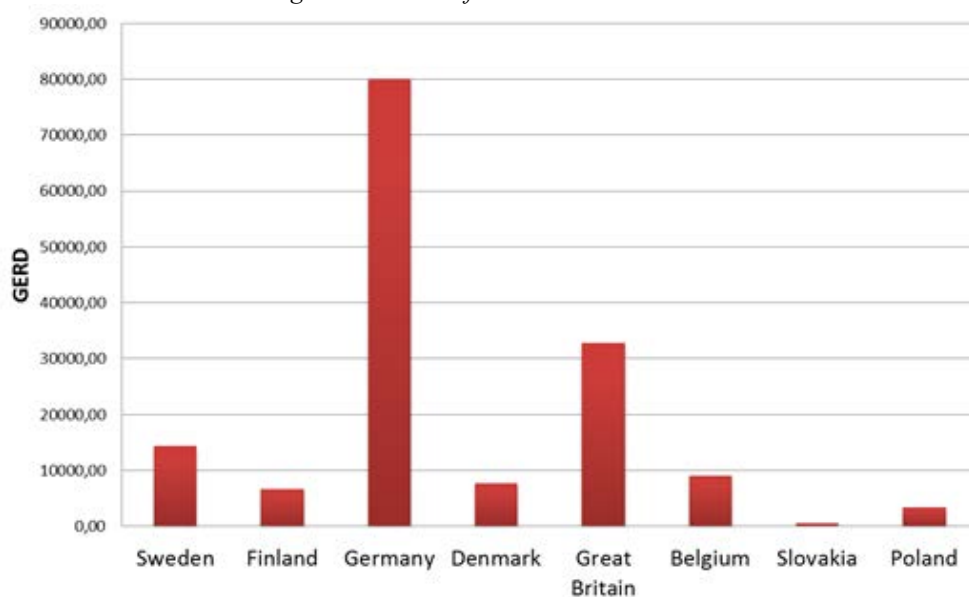
Figure 2: Relationship chart - GDP and GERD



Source: Own processing

Most funding for science and research spends Germany. Sweden and Finland spent on this area a smaller amount of funds from GDP, yet holds a lead position in this area. We expect that it depends on the inflow of funds from the private sector in these countries. (ec.europa.eu, 2017)

Figure 3: GERD of the selected countries



Source: Own processing, appsso.eurostat.ec.europa.eu, 2016



### 3. Conclusion

Small and medium enterprises have the potential to contribute to the realization of green innovation, to the improving of the environment, as well as educating the customer to jointly work towards a sustainable behaviour in Slovakia and abroad. This paper undertakes to contribute to positive change and bring a comprehensive view of the area of eco-innovation in global view. Our first steps and efforts were in the field of theoretical basis of eco-innovation, we examined the field of eco-innovation in the various countries and in the broad context of this concept.

There are also other ways to evaluate eco-innovation performance through different indexes. From a global perspective it is certainly interesting to look at the eco-innovation globally and to compare eco-innovation performance of the EU countries and other countries in the world, to see the differences as well as eco-innovation efforts and directions of these countries.

Based on our analysis, we found that the Eco-innovation Index is related to the overall innovation efforts of the country as well as other indicators that speak of the overall economic or ecological footprint of the country. It is clear that countries with good economic outcomes have higher funding for eco-innovations, and they also have more human resources working and participating in eco-innovation field. Countries with a lower GDP have a more difficult situation; there also spent a large amount of money on science, research, and innovation. The development of this area seems to be more demanding, as the worse economic situation adversely affects many areas and, therefore, green growth and the growth of eco-innovations.

### Acknowledgment

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# INFLUENCE OF DEPRECIATION POLICY IN THE SLOVAK REPUBLIC AND CZECH REPUBLIC ON ACTIVITIES OF BUSINESS ENTITIES IN CONTEXT OF GLOBAL ECONOMY

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**Abstract.** The issue of depreciation of assets is very important for entity because it influences not only accounting but it affects to tax area. The depreciation of assets requires a lot of information on the depreciation policy, i. e. identify depreciation group, depreciation method and then it is possible to quantify the depreciation amount. An allowance monitors the changes in depreciation of long term assets in the Slovakia and Czech Republic. It evaluates their impact on business entities operating in the global economics. It highlights some differences in the applied tax depreciation method in both countries and then it compares the all depreciation mechanism of assets on selected practical examples. The depreciation or an amortization are the most common way in which the costs associated with the procurement of tangible and intangible assets; it can be transferred to tax costs or accounting costs. Tax depreciations belong among the most effective ways of tax optimization. Tax depreciations are taxable as an expense for achieving, securing and maintaining income that is related to business activity and affects the tax base from which is calculated the income tax subsequently. The purpose of accounting depreciation is to capture the actual loss of long-term property that is caused by its abrasion. A gradual transfer of property value into tax expenditures will affect significantly the amount of the basic tax during several tax periods, thus affecting the level of state revenues. Regards on the significant economic role of depreciation, are created a precise rules for govern depreciation. These, at first moment, simple and well-defined rules not use often a particular application, which makes the countless questions that we will try to answer in this article.

**Keywords:** depreciation policy, depreciation, tangible assets, income tax, depreciation rate, coefficient.

**JEL Classification:** G30, M40, M41.

## 1. Introduction

The core of depreciation policy in Slovakia (SK) is the depreciation of Tangible Fixed Assets (TFA), which the Act no. 431/2002 Coll. on Accounting defines as "those of an accounting entity's total on- and off-balance sheet assets, which result from past events and which virtually certain increase the accounting entity's future economic benefits." The TFAs are worn out in the entity, and the financial statement of such impairment is called depreciation. Depreciation

is charged to accounting and tax. The purpose of the accounting depreciation is to express the actual real wear and tear of property corresponding to its use under specific conditions, while the tax depreciation affects the basis of the income tax. (Jackova, 2008; Gregova & Dengova, 2014)

The tax depreciation cannot correspond to the real wear and tear of the property and is based on the specific conditions of individual business entities. (Sebestikova, 2013; Musa et al. 2016) In the case of tax depreciation, the law allows for the choice of two depreciation methods, using a straight-line or accelerated methods. The even (straight-line) depreciation is reflected in tax expenses by equal amounts assigned to individual depreciation groups during all the years of depreciation. The accelerated method defines the law as a degressive method, according to which depreciation at the beginning is the highest and is gradually decreasing in subsequent years. (Bartosova, 2014; Pollak, 2013)

Accounting depreciation is governed by the Accounting Act and the Accounting Procedures for Businesses, which allow the calculation of accounting depreciation. The Income Tax Act no. 595/2003 Coll., as amended, defines depreciation as “the gradual inclusion among tax expenses of depreciation charges of tangible and non-tangible assets”. Over the past years, depreciation policy in SK has undergone various revisions. (Betts & Devereux, 2000; Luger, 1986)

The revisions considered mainly the possibility of interruption of depreciation, changes in the number of depreciation groups (DG), changes in the period and method of depreciation, and the last revision addressed transfer of the tangible assets from one DG to another. The implemented depreciation policy also has an impact on the quality of the business environment. Measurement of the quality takes place through various indexes, the structure of which varies. The Business Alliance of Slovakia measures the environment quality by the Business Environment Index, which is one of the most relevant tools for at national level in terms of methodology. (Mallick, 2005; Weisbach, 2004; Sayenko, 2012)

The Ease of Doing Business Index, which was created by the World Bank, is significant among the indexes that determine the quality at a trans-national level. Another global index serving to measure the quality of the business environment is the Global Competitiveness Index among others. (Alstadsaeter, 2001; Börzel, 2016; Zogning, 2017)

## 2. Depreciation in the Slovak Republic

Under the Income Tax Act, the Accounting Entity (AE) must include TFAs in the depreciation groups in the first year of depreciation, and subsequently decide on the method of depreciation. In the case of the even depreciation, the annual write-off is determined as the input price of the TFAs and the depreciation period for the respective DG.

Table 1 shows the depreciation period of the TFA with regard to DG as well as the annual depreciation on a straight-line basis. In the first year of depreciation, only a portion of the depreciation may be applied depending on the number of months of its being put into use.

*Table1: Even depreciation of TFA in Slovakia*

Depreciation group (DG)	Years of depreciation	Annual depreciation
1	4	1/4
2	6	1/6
3	8	1/8
4	12	1/12

5	20	1/20
6	40	1/40

Source: Own elaboration based on the Income Tax Act

Accelerated depreciation may only be used for assets included in the second and third depreciation groups. These DGs are assigned the coefficients shown in Table 2.

Table 2: Accelerated depreciation of TFA in Slovakia

Depreciation group (DG)	Acceleration coefficient of depreciation		
	In the 1st year	In subsequent years	For advanced residual price
2	6	7	6
3	8	9	8

Source: Own elaboration based on the Income Tax Act

### 3. Depreciation in the Czech Republic

Czech legislation uses the same depreciation breakdown as Slovak legislation. For the most realistic formulation of costs and valuation of assets, the AE provides depreciation based on the depreciation plan. Such write-offs are called accounting depreciation and the accounting rates are determined by their own needs. The Income Tax Act regulates tax depreciation and sets the maximum amount of depreciation that the AE can apply for individual types of assets. (Durinova, 2015) In the first year of use, TFA is classified into depreciation groups in accordance with the Income Tax Act. DGs are also assigned the depreciation period shown in Table 3.

Table 3: Depreciation period of assets in Czech Republic

Depreciation group (DG)	Years of depreciation
1	3
2	5
3	10
4	20
5	30
6	50

Source: Own elaboration based on the Income Tax Act

Similarly, to Slovakia, the both straight-line and accelerated depreciation is also applied in the Czech Republic (CZ). A taxpayer may choose the method of depreciation, which, however, he cannot change throughout the depreciation period. Annual write-off value using even depreciation is calculated as follows:

$$\text{Annual depreciation} = \text{Entry price} * \text{Coefficient} / 100 \quad (1)$$

where coefficient means annual depreciation rate in %. Table 4 lists the annual depreciation rates of TFAs by depreciation groups on a straight-line basis.

Table 4: Annual depreciation rates by depreciation groups in %

Depreciation group (DG)	Annual depreciation rates in %		
	In the 1st year	In consequent years	For advanced acquisition price
1	20	40	33.3
2	11	22.25	20
3	5.5	10.5	10

4	2.15	5.15	5
5	1.4	3.4	3.4
6	1.02	2.02	2

Source: Own elaboration based on the Income Tax Act

For the selected types of TFAs, the Income Tax Act allows to increase depreciation rate by 20% of the acquisition cost (e.g. for machinery, or for agriculture and forestry), by 15% (e.g. for water purification and treatment facilities), or 10% for the assets allocated to the 1st to 3rd DGs except for personal vehicles, and the AE must be its first depreciator. The taxpayer is considered to be the first depreciator of tangible movable assets if he first issued the new TFA that has not yet been used for the intended purpose and which, for the former depreciator, was only the goods or was produced within his own expenses. (Sebestikova, 2013)

Annual depreciation using an accelerated method is calculated as follows:

$$\begin{aligned} \text{Annual depreciation} &= \text{Entry price} / \text{Coefficient} \\ \text{Annual depreciation consequent years} &= \frac{(2 * \text{Residual price})}{(\text{Coefficient} - \text{No of years})} \quad (2) \\ \text{Residual price} &= \text{Entry price} - \text{Accumulated Depreciation} \end{aligned}$$

Table 5 lists the coefficients of accelerated TFA depreciation by depreciation groups.

Table 5 Coefficients of accelerated depreciation

Depreciation group (DG)	Coefficient of accelerated depreciation		
	In the 1 <sup>st</sup> year	In consequent years	For advanced acquisition price
1	3	4	3
2	5	6	5
3	10	11	10
4	20	21	20
5	30	31	30
6	50	51	50

Source: Own elaboration based on the Income Tax Act

### **Case 1: Comparison of TFA depreciation of in the 1st depreciation group (DG1) in Slovakia and in the Czech Republic using even depreciation – the personal vehicle**

AE purchased TFA - a car at a cost of € 12,000 (CZK 324,000, the exchange rate of 1 € = 27 CZK) and placed it in DG1, applying the straight-line method. The amount of annual write-offs and the method of its calculation in both countries are shown in Table 6.

Table 6: Even depreciation in SK and CZ – the personal car

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	12 000 / 4	3 000	(12 000 * 11) / 100	1 320
2nd year	12 000 / 4	3 000	(12 000 * 22.25) / 100	2 670
3rd year	12 000 / 4	3 000	(12 000 * 22.25) / 100	2 670
4th year	12 000 / 4	3 000	(12 000 * 22.25) / 100	2 670
5th year	-	-	(12 000 * 22.25) / 100	2 670

Source: Own elaboration

Note that the car is placed in DG1 and depreciates for 4 years in Slovakia, while it is placed in DG2 and is depreciated for 5 years CZ, resulting in a longer projection of the purchase price into the cost of the entity.

### ***Case 2: Comparison of even depreciation in the second DG (DG2) – the furniture***

AE purchased furniture at a cost of € 2,400 (CZK 64,800) applying even depreciation, of which calculation is shown in Table 7.

*Table 7: Even depreciation in SK and CZ – the furniture*

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	2 400 / 6	400	(2 400 * 11) / 100	264
2nd year	2 400 / 6	400	(2 400 * 22.25) / 100	534
:	:	:	:	:
5th year	2 400 / 6	400	(2 400 * 22.25) / 100	534
6th year	2 400 / 6	400	-	-

*Source: Own elaboration*

One may find that in DG2, there are differences in the depreciation periods: 5 years in CZ, and 6 years in SK. Depreciation rates in SK are the same for the entire depreciation period, namely € 400. In CZ, the 1<sup>st</sup> year write-off is lowered by € 136 while it is increased by € 134 in the 2nd to 5th years, in comparison with the annual write-offs in SK.

### ***Case 3: Comparison of accelerated depreciation in DG1 – the motorcycle***

AE purchased a motorcycle at a cost of € 12,000 (CZK 324,000) and applied an accelerated depreciation. The details of its calculation are shown in Table 8.

*Table 8: Accelerated depreciation in SK and CZ – the motorcycle*

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	12 000 / 6	2 000	12 000 / 5	2 400
2nd year	(2 * 10 000) / 7-1	3 333	(2 * 9 600) / 6-1	3 840
3rd year	(2 * 6 667) / 7-2	2 667	(2 * 5 760) / 6-2	2 880
4th year	(2 * 4 000) / 7-3	2 000	(2 * 2 880) / 6-3	1 920
5th year	(2 * 2 000) / 7-4	1 333	(2 * 960) / 6-4	960
6th year	(2 * 667) / 7-5	667	-	-

*Source: Own elaboration*

Let's recall there is a 5 years depreciation period in the Czech Republic, while in Slovakia it is 6 years. In this DG, the AE can choose either even or accelerated depreciation in the both countries. Czech law allows AE to increase the annual depreciation in the first year of use by either 20%, 15% or 10%, but this possibility cannot be applied in Slovakia.

### ***Case 4: Comparison of even depreciation in the third DG (DG3) – the stove***

AE purchased the stove at a cost of € 4,000 (CZK 108,000) and applied an even depreciation. Table 9 shows the method of calculation and amount of write-offs in DG3.

*Table 9: Even depreciation in SK and CZ – the stove*

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	4 000 / 8	500	(4 000 * 5.5) / 100	220
2nd year	4 000 / 8	500	(4 000 * 10.5) / 100	420
:	:	:	:	:
8th year	4 000 / 8	500	(4 000 * 10.5) / 100	420
9th year	-	-	(4 000 * 10.5) / 100	420
10th year	-	-	(4 000 * 10.5) / 100	420

*Source: Own elaboration*

Even in DG3, there are different depreciation periods in both countries. In Slovakia, the depreciation rate is the same, namely € 500, over the entire depreciation period, and the TFA is depreciated for 8 years in DG3. In the Czech Republic the annual write-offs in the 1st year and subsequent years are lower by € 280 and € 80, respectively than in Slovakia, but the assets included in this DG are depreciated up to 10 years.

**Case 5: Comparison of accelerated depreciation in DG3 – the stove**

AE purchased TFA, a stove, at a cost of € 16,000 (CZK 432,000). An accelerated depreciation in the both countries is shown in Table 10.

Table 10: Accelerated depreciation in SK and CZ – the stove.

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	16 000 / 8	2 000	16 000 / 10	1 600
2nd year	(2 * 14 000) / 9-1	3 500	(2 * 14 400) / 11-1	2 880
3rd year	(2 * 10 500) / 9-2	3 000	(2 * 11 520) / 11-2	2 560
4th year	(2 * 10 500) / 9-3	2 500	(2 * 8 960) / 11-3	2 240
5th year	(2 * 7 500) / 9-4	2 000	(2 * 6 720) / 11-4	1 920
6th year	(2 * 5 000) / 9-5	1 500	(2 * 4 800) / 11-5	1 600
7th year	(2 * 3 000) / 9-6	1 000	(2 * 3 200) / 11-6	1 280
8th year	(2 * 1 500) / 9-7	500	(2 * 1 920) / 11-7	960
9th year	-	-	(2 * 960) / 11-8	640
10th year	-	-	(2 * 320) / 11-9	320

Source: Own elaboration

By comparison, one may notice that, according to the Slovak legislation, the rate of accelerated depreciation in the first year is considerably higher than that of an even depreciation, but in the second and subsequent years it is gradually decreasing and the depreciation period in this group is 8 years. Also under Czech legislation, the depreciation rate in the first year is higher than that of an even depreciation, but in the second and subsequent years it is gradually decreasing, with the assets depreciated within 10 years.

**Case 6: Comparison of straight-line depreciation in the 4th DG (DG4) – the stacker**

AE purchased a stacker at a cost of € 12,000 (CZK 324,000) and applied an even depreciation. Table 11 shows the method of calculation and amount of write-offs in DG4.

Table 11: Even depreciation in SK and CZ – the stacker

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	12 000 / 12	1 000	(12 000 * 2.15) / 100	258
Years 2-12	12 000 / 12	1 000	(12 000 * 5.15) / 100	618
Years 13-20	-	-	(12 000 * 5.15) / 100	618

Source: Own elaboration

It can be noticed that the stackers are included in DG4 in the both countries but with a different depreciation period. Assets are depreciated for 12 years in SK while up to 20 years in CZ. Throughout the depreciation period, annual write-offs in SK are the same, i.e. in the amount of € 1,000, while in CZ, the 1<sup>st</sup> year write-off is lower (only € 258), and in the second and in subsequent years the annual write-offs are up to € 618.



### ***Case 7: Comparison of even depreciation in the 5th DG (DG5) – the storage tank***

AE purchased a storage tank at a cost of € 30,000 (CZK 810,000) and applied the straight-line method of depreciation that is shown in Table 12.

*Table 12: Even depreciation in SK and CZ – the storage tank*

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	30 000 / 20	1 500	(30 000 * 1.4) / 100	420
Years 2-20	30 000 / 20	1 500	(30 000 * 3.4) / 100	1 020
Years 21-30	-	-	(30 000 * 3.4) / 100	1 020

*Source: Own elaboration*

Based on the calculations above we can state that TFA included in this DG is depreciated in SK for 20 years, while in CZ it is depreciated for up to 30 years. The annual write-offs are in the same amount, namely 1 500 €, for twenty years in Slovakia, whereas in CZ it is only 420 € in the first year and in the second and in subsequent years it is 1,020 €.

### ***Case 8: Comparison of even depreciation in DG6 – the administration building***

AE purchased an administrative building at a cost of € 100,000 (CZK 2,700,000) and applied a uniform depreciation. Table 13 shows the calculation method and the amount of the annual depreciation of this building, which is included in DG6 in SK as well as in CZ.

*Table 13: Straight-line depreciation in SK and CZ – the administration building*

Depreciation period	Computing method in SK	Tax write-offs in SK	Computing method in CZ	Tax write-offs in CZ
1st year	100 000 / 40	2 500	(100 000 * 1.02) / 100	420
Years 2-40	100 000 / 40	2 500	(100 000 * 2.02) / 100	2 020
Years 41-50	-	-	(100 000 * 2.02) / 100	2 020

*Source: Own elaboration*

Under Slovak legislation, buildings are depreciated for 40 years, while Czech legislation allows them to depreciate up to 50 years. The annual write-off in the same amount (€ 2,500) is for forty years in our country (SK). In CZ the depreciation rate is different in the first year of depreciation (€ 1,020) than in the second and subsequent years (€ 2,020 p.a.).

## **4. Conclusion**

Depreciation of tangible fixed assets (TFA) is one of the important costs for the accounting entity (AE), which affects the level of its tax liability towards the state. We can conclude that the Slovak AEs pay more funds to the state for income tax than the Czech entities.

In the first three depreciation groups, the Czech AE can apply an increased annual write-off in the first year of use. There is no such option in Slovakia. The Slovak AE can apply the accelerated depreciation only for the TFA, which is rank in the 2nd and 3rd depreciation groups. The Czech AE can apply a straight-line and accelerated depreciation in all the DGs. (Akins & Paxson, 2013; Williamson & Stutzman, 2016)

Depreciation policy is an important tool for effective management of each business entity within the accounting system. It follows from this that if the state changes the amount and the period of depreciation of the TFA, it has an impact not only on the result of the AE's economy but also on revenues to the state budget. If the state reduces the depreciation period for TFA, it receives less funding in the state budget, but indirectly affects the amount of the AE's funds for its renewal and development. (Keating, 1999)

Overall improvement of the business environment is a basic condition for the long-term competitiveness and growth of every economy. It is the environment that the state supports, and in which protects competition, creates clear rules, effectively safeguards compliance, while minimizing administrative barriers and demands on entrepreneurs. (Bartosova, 2008)

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## ARE GLOBAL FINANCIAL MARKET INFLUENCED BY BEHAVIORAL EFFECTS?

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**Abstract.** Global financial markets are nowadays interconnected and influenced by both fundamental and behavioural or psychological effects. Stock prices are likely to be among the prices that are relatively vulnerable to purely social movements because there is no accepted theory by which to understand the worth of stocks and no clearly predictable consequences to changing one's investments. Ordinary investors have no model or at best a very incomplete model of the behaviour of prices, dividends, or earnings of speculative assets. The objective of this paper is to evaluate the influence of behavioural effects of market participants on the stock price returns, volatility and trading volumes. Methodologically we have used various economic indicators that measure the degree of optimism that consumers feel and how the level of consumer confidence affects stock prices. The results of used regression model shows evidence of flagrant decision errors under social pressure but not of abandonment of rational individual judgment, and confirmed the reaction of chosen macroeconomic variables on the stock index movement. The Behavioural Finance has identified contagion as one of the underlying mechanisms of booms and panics in financial markets, where contagious entities such as rumours, profit expectations, trading rules and others are transmitted via social interactions. The paper highlights social media data consequence and their impact on stock prices movements and forecasts, as well as evidence supporting the hypothesis of emotions playing a more important role during stressed markets compared to calm periods.

**Keywords:** behavioural finance, psychological effects, investor sentiment, cognitive and neural processes, stock market movements.

**JEL Classification:** C13, E 44, G2.

### 1. Introduction

The last decade experiences brought a number of lessons from an excessive strong volatility of stock markets, commodity prices and other financial assets, what led economic thinking into form that forces us to reflect on the reality of the idea of rational investors. Theoretical studies of irrational reasoning are often performed in artificial, unrealistic conditions and to use this knowledge in trading to achieve above average returns is extremely challenging. Nevertheless, behavioural economics has fundamentally changed the way economists look at financial problems. The behavioural financial models explain many of the phenomena in the financial markets and find a great deal of use in financial assets and derivatives pricing, at creating an optimal portfolio, time diversification of portfolios, in asset management analysis, in determining exchange rates and others financial problems.

## 2. Conceptual issues interpreting behavioural effects on stock markets

Conceptual views on estimated behavioural effects on stock markets point out that stock markets are to a great extent influenced by psychology of individual investors, their sentiment, and in certain cases play even more important role as fundamental factors.

Some scholars think that investor sentiment could explain the abnormal phenomena in the stock markets. The behavioural finance suggests that irrational sentiment (overly optimistic/pessimistic expectations about investment risk and future cash flow; Chang et al. 2009) can persist and affect stock prices for significant periods of time. The results of the mentioned study show that the sentiment index has predictive power on returns for various long-short portfolios based on size, volatility, profitability, dividend payment, fixed assets, research and development, book-to-market ratio, and sales growth in other markets, especially developed markets, and that the predictability lasts for at least two years. Baker & Wurgler (2007) state that stock mispricing is based on uninformed demand shocks induced by irrational investors and limits to arbitrage. Brown & Cliff (2005) claim that sentiment could be a very persistent effect so, the demand shocks of irrational traders could be correlated over time leading to a strong and persistent mispricing.

Most existing studies on investor sentiment have focused on how emotion affects return and volatility in the stock market. They apply regression models to study how investor sentiment impacts stock price by using aggregate or industrial-level data in some countries. For example, the study of Schmeling (2009) examines whether consumer confidence, as a proxy for individual investor sentiment, affects expected stock returns internationally in 18 industrialized countries. In line with evidence for the U.S., they find that sentiment negatively forecasts aggregate stock market returns on average across countries. When sentiment is high, future stock returns tend to be lower and vice versa. This relation also holds for returns of value stocks, growth stocks, small stocks, and for different forecasting horizons. Similar conclusions, meaning that investor sentiment is one of the underlying causes of nonlinearity and asymmetry in stock returns, were confirmed by studies of Charoenrook (2005), Wang et al. (2006), Yu & Yuan (2011), (Kmet'ko & Badura, 2014) and Da et al. (2015).

A sizeable percentage of investors are using social media to obtain information about companies. As a consequence, social media content about firms may have an impact on stock prices. Various studies utilize social media content to forecast stock market-related factors such as returns, volatility, or trading volume. Pieter de Jong et al. (2017) investigate whether a bidirectional intraday relationship between stock returns and volatility and tweets exists. Findings indicate that 87% of stock returns are influenced by lagged innovations of the tweets data, but there is little evidence to support that the direction is reciprocal, with only 7% of tweets being influenced by lagged innovations of the stock returns. Nooijen & Broda (2016) examine the predictive capabilities of online investor sentiment for the returns and volatility of MSCI U.S. Equity Sector Indices by including exogenous variables in the mean and volatility specifications of a Markov-switching model. They find that the Thomson Reuters Marketpsych Indices (TRMI) predict volatility to a greater extent than they do returns. In the two-regime setting, there is evidence supporting the hypothesis of emotions playing a more important role during stressed markets compared to calm periods. The authors also find differences in sentiment sensitivity between different industries: it is greatest for financials, whereas the energy and information technology sectors are scarcely affected by sentiment.

Another economic indicator that measures the degree of optimism that consumers feel about the overall state of the economy as well as their personal financial situation represents the

consumer confidence. Several authors (Shiller, 1984; Fisher & Statman, 2003; Baker & Wurgler, 2007; Reed, 2016) measure consumer sentiment via analysis of social networks and show that such sentiment affects stock prices; specifically, the S&P 500 and the Dow Jones Industrial Average. The authors implemented lexicographic analysis of Twitter data over a three-month period and found that talk intensity of economic issues not only causes shift in the daily stock market prices, but also has a significant negative effect.

The paper deals with the analyses and predictions of both fundamental and behavioural effects on stock market movements. The objective of this paper is to analyse the time-varying nature of selected world stock market indices by using a dynamic correlation model as well as to evaluate the influence of behavioural effects of market participants on the volatility.

### 3. Data and methodology

To suggest the regression model, it was required a use of methods of summary, synthesis and analogy of the knowledge and creation of a short literature review. Second, it was done a data collection. In our model there were used monthly data and our time series range from 1999 to 2017 (222 observations). While similar studies generally use quarterly data, we decided to work on a monthly frequency in order to capture the more precise outputs. It was used the time series from the QUANDL DataStream, FED and ECB database. To capture the dynamics of our model, it was used as a dependant variable index S&P 500, as a measure of stock price movement and as a remark of economy. Further, the real effective exchange rate USD/EUR and Consumer Price Index were used to incorporate the currency depreciation/appreciation and inflation trend into our framework. Last, we incorporated into model the Economic Policy Uncertainty Index and Consumer Confidence Index to capture the behavioural and psychological aspect of market participants. The selected parts of data series are plotted in a Figures 1. Regarding the methodology, we were used a method of multiple regression in order to explain the relationship among the independent variables to the dependent variable, according the formula (Hair et al., 2010):

$$Y = a + b_1x_1 + b_2x_2 + \dots + b_x x_x \quad (1)$$

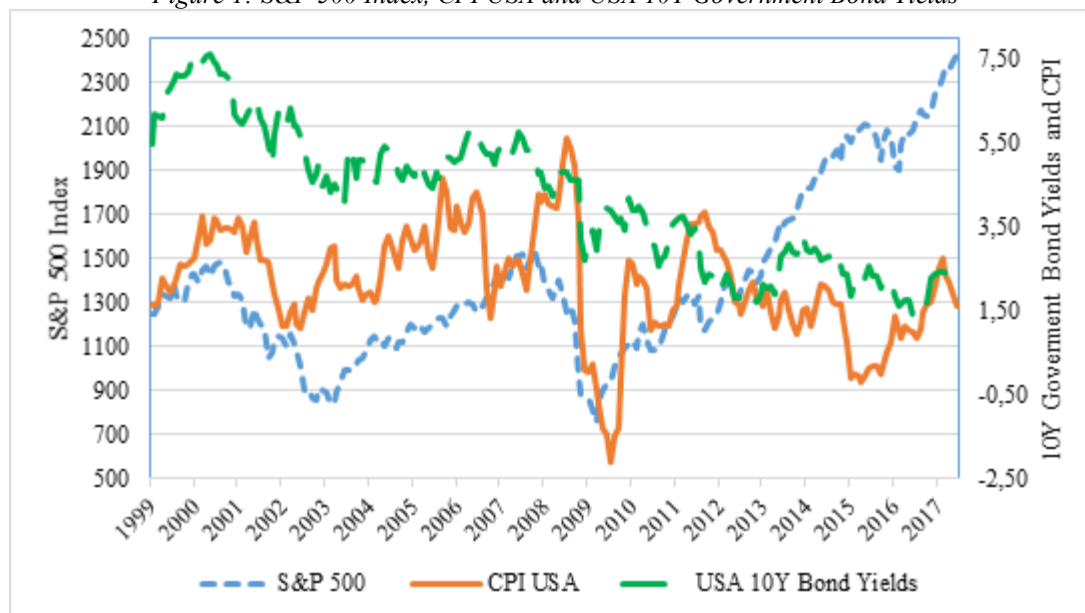
where Y is the value of the Dependent variable (Y), a (Alpha) is the Constant or intercept, and b<sub>1</sub> is the slope (Beta coefficient) for X<sub>1</sub>, X<sub>1</sub> first independent variable that is explaining the variance in Y, b<sub>2</sub> is the slope (Beta coefficient) for X<sub>2</sub>, X<sub>2</sub> first independent variable that is explaining the variance in Y, and so on. The computations were completed in Eviews. Figure 1 reports the data, mnemonics, descriptions, sources and specifications.

Table 1: Dataset description

Mnemonic	Description	Source	Specification
S&P 500	Stock index	Quandl	log, SA
CPI	Consumer Price Index	FED	annualized, SA
BONDS	10Y Government bonds yields	FED	percent, SA
CCI	Consumer Confidence Index	Quandl	log, SA
EPU	Economic Policy Uncertainty	ECB	percent, SA
EUR/USD	Real effective exchange rate	ECB	absolute number

Note: SA=seasonally adjusted  
 Source: Own estimation

Figure 1: S&P 500 Index, CPI USA and USA 10Y Government Bond Yields



Source: Own estimation (data form Quandl and FED database)

#### 4. Results and discussion

In this section, the multiple regression estimates for the selected stock price index S&P 500 and chosen independent variables – Consumer Price Index, 10Y Government bond yields, Real effective exchange rates USD/EUR, Consumer Confidence Index and Economic Policy Uncertainty Index. The output from the model confirmed the negative correlation of all selected independent variables on the S&P 500 dynamic trend, while the consumer price index effect differs. The chosen independent variables captured 58,2 % of the dynamic of S&P 500 index. The inflation level typically influence index grows (in case of positive inflation), as prices generally drive higher performance. The government bond represents an alternative investment opportunity, and therefore have a negative correlation on stock index. In time of low interest rates, bond prices are lower and investor are searching upon higher performance those could be find in stock markets. On the other side, the increase of interest rates will be reflected in partial asset reallocation from stocks to bond market. The asymmetric dynamics in the correlations of global equity and bond returns was confirmed by the study of Cappiello et al. (2015). The negative currency effect is connected with the influence on the balance of payment. The currency appreciation makes export prices higher and will cause lower stock prices on export oriented companies, and vice versa. Regarding the behavioural variables, in both cases the model output confirmed the negative regression coefficient. While economic policy uncertainty index amounted a small negative effect on stock index, the consumer confidence index pointed to a strong influence, therefore belongs to a seriously followed economic indicator by investor society. The next table below summarises the model output for S&P 500 index.

Table 2: Model output

Dependent Variable: S\_P\_500\_LN\_  
 Method: Least Squares  
 Date: 07/24/17 Time: 13:03  
 Sample: 1999M01 2017M06  
 Included observations: 222

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EUR_USD	-0.172543	0.090984	-1.896410	0.0592
ECONOMIC_POLICY_UNCERTAIN	-0.002280	0.000281	-8.108620	0.0000
CPI_USA	0.068660	0.010616	6.467546	0.0000
CONSUMER_CONFIDENCE_INDE	-0.573808	0.059444	-9.652837	0.0000
USA_10Y_BOND_YIELDS01	-0.160677	0.010232	-15.70343	0.0000
C	10.59054	0.232536	45.54377	0.0000
R-squared	0.582198	Mean dependent var		7.209436
Adjusted R-squared	0.572526	S.D. dependent var		0.259285
S.E. of regression	0.169524	Akaike info criterion		-0.684985
Sum squared resid	6.207517	Schwarz criterion		-0.593021
Log likelihood	82.03336	Hannan-Quinn criter.		-0.647856
F-statistic	60.19815	Durbin-Watson stat		0.330194
Prob(F-statistic)	0.000000			

Source: Own estimation (using EViews software)

Estimation Command:

LS S\_P\_500\_LN\_ EUR\_USD ECONOMIC\_POLICY\_UNCERTAI CPI\_USA  
 CONSUMER\_CONFIDENCE\_INDE USA\_10Y\_BOND\_YIELDS01 C

Estimation Equation:

S\_P\_500\_LN\_ = C(1)\*EUR\_USD + C(2)\*ECONOMIC\_POLICY\_UNCERTAI + C(3)\*CPI\_USA +  
 C(4)\*CONSUMER\_CONFIDENCE\_INDE + C(5)\*USA\_10Y\_BOND\_YIELDS01 + C(6)

Substituted Coefficients:

S\_P\_500\_LN\_ = -0.172543\*EUR\_USD - 0.002280\*ECONOMIC\_POLICY\_UNCERTAI +  
 0.068660\*CPI\_USA - 0.573808\*CONSUMER\_CONFIDENCE\_INDE -  
 0.160677\*USA\_10Y\_BOND\_YIELDS01 + 10.5905446581

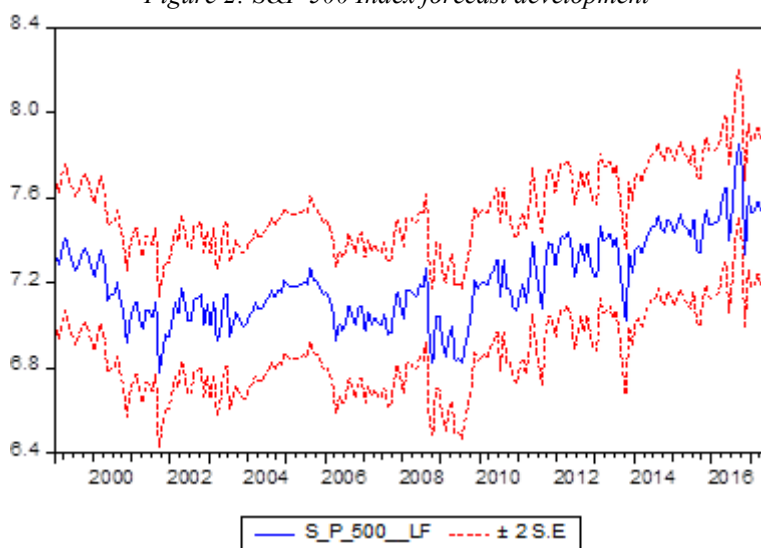
The further economic indicator, not included in our model, but having strong attention of all investors is connected with market volatility. The volatility significantly grows in time of negative mood on the market, higher geopolitical risks or monetary policy changes. In a such situation, market tend to make corrections from previous rallies, and statistically ones a year there are a massive sell offs. This happened for example in summer 2015 (China currency devaluation) or in February 2016 (market fears over the European banking system, oil price falls). And vice versa, the volatility declines in times of bull market moods. As an example could serve the last stock rally from Dec. 2016 up to May 2017 (Trump economic effect). The last example was characteristic by extremely low volatility and simultaneously several historical stock markets records, especially in US market. The next table below summarises the model output for S&P 500 index.

Further we try to forecast the price development of analysed S&P 500 index for the next year, while taking into account all independent variables used in the model. Methodologically



was used forecast function in EViews software. The results show a strong correction of the index in coming months after reaching a pick in summer 2017. This confirm the typical market reaction after the strongest stock market rally since 2009. At present the U.S. economy accelerated in the first half of 2017 as consumers ramped up spending and businesses invested more on equipment, but persistent sluggish wage gains cast a dark shadow over the growth outlook. US market point out to an overpriced stock assets and psychological influence of the bull market effect. The next figure below summarises the model output for the stock index forecasting.

Figure 2: S&P 500 Index forecast development



Source: Own estimation (calculation in EViews)

## 5. Conclusion

Except of the fundamental aspect of the economies, the financial markets are significantly influenced by behavioural, or psychological effects. (Fenzl et al., 2016) The key question is, what facts about financial decisions and what cognitive and neural processes influence people by taking financial decisions. Because of cognitive constraints and a low average level of financial literacy, many household decisions violate sound financial principles. Households typically have under diversified stock holdings and low retirement savings rates. Investors over extrapolate from past returns and trade too often. Even top corporate managers, who are typically highly educated, make decisions that are affected by overconfidence and personal history. Many of these behaviours can be explained by well-known principles from cognitive science.

This paper investigated the link between the US S&P 500 index, and chosen macroeconomic variables and behavioural indicators. We relied on the correlation method to establish whether the correlations between stock market and chosen variables has evolved over time and was affected more by fundamental or psychological aspects. The output from the model confirmed the negative correlation among selected variables on the stock index movement, while inflation rate effect differs. The volatility significantly grows in time of negative mood on the market, higher geopolitical risks or monetary policy changes. The quantitative monetary policy adopted by major central banks caused rapid decline of government bond prices, while stock indices went up significantly. This movement of stock market participants toward potential high yields could be seen in US, Europe and Japan markets as well.

Further we analyse the psychological effect on stock market movements. The literature in behavioural finance has forcefully demonstrated that these robust decision anomalies have important consequences for individual investor wealth, stock market prices, and regulatory policy. (Frydman & Camerer, 2016) What is less clear, from a cognitive science perspective, is the psychology that generates the observed patterns of saving, investing, and trading behaviour. There is a large number of trading patterns that are inconsistent with the rational use of information and the ideal balance of risk and return. A useful next step in organizing this set of facts is to understand the correlation structure among the various biases. Many of these seemingly distinct biases could be generated by a common neural and psychological mechanism.

Some emerging evidence for this conjecture has already been found, as the same brain areas encode signals that generate the disposition effect and repurchase effect. This neural overlap fits with a strong correlation between these effects at the behavioural level. Most of the research use longstanding folk psychological constructs such as limited attention, emotion, salience, and the value of simplicity that psychological limits imply. Being able to measure the psychological influence on stock market movements, there will be needed a broader interdisciplinary study of financial decision making, as a collaboration using the ideal combination of mathematical modelling, cognitive and neural measures, and observed behaviour.

### Acknowledgment

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# RESEARCH FRONTS AS A MECHANISM FOR INTEGRATION OF RUSSIAN SCIENCE IN THE INTERNATIONAL SCIENTIFIC COMMUNITY

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**Abstract.** Modern science is developing very rapidly, with more and more new areas of research constantly appearing. Each new discovery brings more questions than answers. In these circumstances, it is often difficult to define what the scope or direction of research is most beneficial. To solve this problem, Clarivate Analytics together with The Chinese Academy of Sciences, has, for four years now, published analytical reports about 100 most needed areas of research in the natural and social sciences (Research Fronts), as well as 80 new areas of knowledge, which are gaining popularity most rapidly in the scientific community. In addition, this report contains a discussion of certain areas of science and the countries, institutions and scientists who have made significant contributions to their study. Research Fronts is a wide variety of research topics. This article discusses the integration of individual scientists, institutions and countries in the international scientific community within the framework of intensifying research on the subject of research fronts. As an example the experience, problems and prospects of the Russian scientific community to integrate into the world in various scientific fields. The article also provides an assessment of the possibility of using the research front as the driver for the growth of the scientific potential of Russia, conducting joint research with leading scientific institutions of foreign countries and improving ways to support scientific research and development activities.

**Keywords:** science, international research, research fronts

**JEL Classification:** I23, O32, O38

## 1. Introduction

Currently, the international scientific community is talking about Russian science. However, despite multiple activities on the part of the authorities and the Academy of Sciences, our country has fallen behind. Scientometric evidence proves this and additionally points to the problems in the direction of research conducted by Russian scientists. Research is conducted in industries that are not of interest to the international community and does not give impetus to the further development of science and technology already being considered and researched by foreign specialists.

By the Decree of the President of the Russian Federation, Vladimir Putin "On measures to implement the state policy in the field of education and science" of May 7, 2012 (2012, Presidential Decree), the task given, is to include and integrate, Russian scientific periodicals into the international medical and scientific literature databases such as Web of Science and Scopus.

In addition, the outlined course on the integration of Russian science into the international scientific space predetermines the need for Russian scientists to publish the results of their activities in journals indexed in these scientometric databases. Particular attention is also to be paid to conducting joint research between Russian and foreign scientists on topical issues, but there are also certain questions: defining the strategies and motives for cooperation, the impact of cooperation on research productivity, the relation of geographical proximity to cooperation, the impact of new media technologies on cooperation and professional guidelines to document collaboration. (Bozeman et al., 2015)

## 2. Materials and methods

At the moment, the implementation of this task is reflected in the analytical reports of Clarivate Analytics, the owner of the publishing platform Web of Science. This company developed the most advanced scientometric mechanisms, models and tools, so that the author of an article would be able to abstract from the second Scopus database, especially since bibliometric world trends are also being broadcast there.

This article uses such technologies of scientific search as scientific classification, information systematisation, methods of empirical analysis, mathematical analysis, as well as standard methods of semantic and statistical analysis. (Gopaldas, 2016)

## 3. Results

According to the number of publications in the Web of Science Core Collection, the Russian Academy of Sciences is on the fifth place among all organisations of the world, far ahead of the sixth China Academy of Sciences (Tab. 1).

Table 1: Top 10 organisations by the number of publications in the Web of Science Core Collection

Name	Rank	Web of Science Docements	Category Normalized Citation Impact	Times Cited	% Docs Cited
University of California System	1	1 244 065	1,83	36 995 526	72, 56%
Centre National de la Recherche Scientifique (CNRS)	2	712 130	1,21	15 238 208	81,61%
University of London	3	625 405	1,52	13 073 349	66,25%
Harvard University	4	598 546	2,14	22 244 535	71,35%
<b>Russian Academy of Sciences</b>	<b>5</b>	<b>507 486</b>	<b>0,51</b>	<b>4 067 098</b>	<b>67,60%</b>
Chinese Academy of Sciences	6	449 398	1,02	5 869 220	75,63%
United States Departament of Energy (DOE)	7	414 366	1,65	11 253 053	77,01%
Pennsylvania Commonwealth of Higher Education (PCSHE)	8	401 107	1,51	9 042 440	67,68%
Florida State University System	9	361 393	1,3	6 236 595	68,10%
National Institutes of Health (NIH)-USA	10	338 497	1,92	14 512 306	74,82

Source: InCites<sup>TM</sup> Analytical System

Unfortunately, all other Russian organisations, including the universities included in the development program of Russian universities 5-TOP-100 (<http://5top100.com/>), cannot boast such high figures, even if they are combined. It can be stated that Russian authors are not sufficiently published in international publications.

Another example of implementing the Presidential Decree is the creation on the platform of the Web of Science, of the regional bibliographic index, Russian Science Citation Index. 652

best magazines published in the territory of the Russian Federation, selected according to a certain methodology (<http://elibrary.ru/>). Additionally, currently added into the international scientific environment is the metadata of publications of all the journals for a ten-year period and are available for viewing by foreign scientists. This joint project of the Scientific Electronic Library Company and the then Thomson Reuters project will speed up and strengthen the international collaboration in scientific research (Jarneving, 2005; Jarneving, 2007).

This level of international cooperation is now necessary for the modern scientific community, especially for Russia. Clarivate Analytics experts say that about 2/3 of the most highly cited publications are issued by the international authors. (Boyack & Klavans, 2010) However, there are not that many Russian authors in such publications. Referring back to Figure 1, it is clear that, despite the fact that 67.6% of the RAS publications are cited at least once, the total number of citations is several times less than that of the leading organisations. Additionally, this thesis proves that the quoting of the publications by the Russian Academy of Sciences only reaches half of the world average citation.

All the above confirms the need to improve the quality of work by Russian authors and to increase their relevance. Naturally, the demand for publications depends on a number of endogenous and exogenous factors, the main factors of which are the level of technological equipment in the country, investment in scientific activity, and the formation of prioritised directions for the development of science. (True et al., 2011) The transition from one technological order to another is a lengthy and expensive process, the investment effect is difficult to assess, and these investments are not large enough. The well-known Russian scientometrist, head of the laboratory of scientometrics of UrFU Akoev M. A., back in 2013, in his study, using the example of one of the largest universities in the country, the Ural Federal University (Fig. 1) (Akoev, 2016), noted, that at purchasing power parity, the level of investment in research in Russia is one of the lowest. However, it should be noted that the studies have a practical nature. According to the share of the scientific research work for industry, compared to the total amount of funding for scientific research, the University occupies an advanced position, which is especially important for the old industrial region in which it is located.

Work on the quality of research should be carried out purposefully and in the long term in which achieving results can last for decades. Russia does not have this time, the backwardness of the country requires prompt intervention in the integration of Russian science into foreign space.

In such circumstances, there remains one more mechanism to increase the demand for publications - the choice of a strategic direction in research. In this case, this direction should be based on three premises:

- availability of resources for the development direction in the country;
- advanced positioning of the direction;
- the direction should be of interest to the whole world (Upham & Small, 2010).

Figure 1: Number of publications, share of research work for industry in total research work funding, number of publications per academic and research staff, value of article in 2008-2011 in dollars at purchasing power parity

Institution	Publications	Percentage of research income from industry	Publications per academic and research staff	US\$ (PPP) per publication
Aalto University	6 080	23%	2,7	\$ 75 297,16
City University Hong Kong	8 751	18%	4,7	\$ 68 515,28
Kazan Federal University	1 422	35%	0,4	\$ 65 928,21
Saint Petersburg State University	4 937	10%	1,0	\$ 59 240,64
Sungkyunkwan University	15 395	34%	8,6	\$ 86 729,86
Tsing Hua University	22 791	40%	5,8	\$ 137 197,84
Yonsei University	20 364	14%	7,3	\$ 80 284,92
Ural Federal University	1 541	35%	0,5	\$ 52 870,77
Ural RAS	2 889	30%	1,5	\$ 73 581,93

Source: research report for the development of a science development plan in UrFU for the first phase of Thomson Reuters 2013 (Akoev, 2016).

In scientometrics, this sphere of the functioning of science was called the "research fronts" (Research Fronts). The planning and evaluation by Research Fronts is currently one of the major trends in the development of the world scientometrics science. (Kosten, 2016; Bornmann & Haunschild, 2016) In general, questions of scientometrics, including the quality of research, increasing citations, promoting scientific work, assessing and forming new scientific metrics in modern science, appear more often. (Matveeva and Blagin, 2016; Shibata et al., 2009)

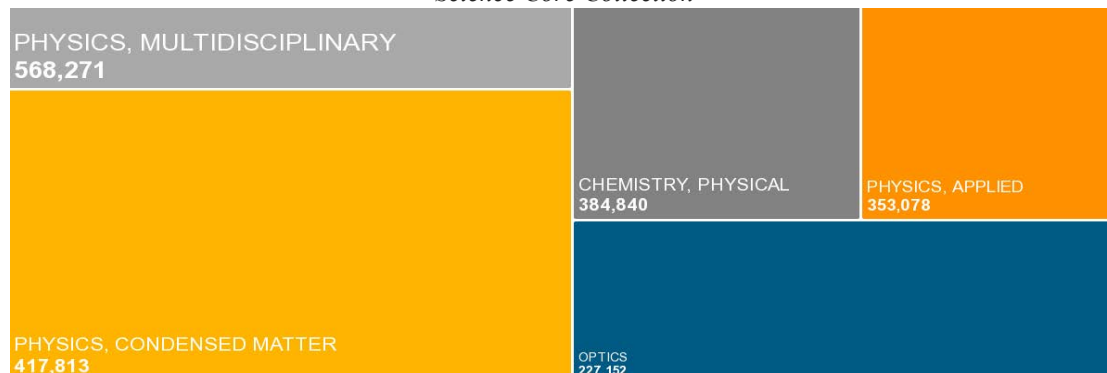
The research fronts are characterised by the following messages:

- these are groups of highly cited publications (publications included in 1% of the most cited in their subject areas), made over the past 10 years (Kasyanov, 2016);
- the data of the group are clustered on the basis of semantic analysis with the selection of keywords (Shibata et al., 2008);
- "the research front is highly likely to be a hot topic of scientific research (on which it is actively published and actively cited)" (Kasyanov, 2016);
- they can be calculated statistically;
- allows you to assess how long this topic will last, as highly cited.

The search technology for research fronts is fully implemented on the Web of Science platform using the Essential Science Indicators tool. (Ma & Liu, 2016) This add-on is a separate database that helps to form priority (on scientometric indicators) directions of scientific activity for a certain period of time, for example, up until the current moment. (Fujita et al., 2013) This possibility, if one does not approach it in a too formalised manner, should become an imperative in the activities of research organisations. (Fujimagari & Fujita, 2014)

Scientific activity within the existing research fronts is a breakthrough activity and creates a large added value. The problem is in the fact that the areas in which our scientists occupy a serious world place are not included in the breakthrough research fronts. For example, the number of articles published by Russian scientists is dominated in the chemical and physical directions, as well as optics (Fig. 2), but in the world they are not a highly cited cluster of publications.

Figure 2: Top 5 major scientific directions of Russian authors in the number of publications in the Web of Science Core Collection



Source: InCites<sup>TM</sup> Analytical System

The importance of accounting for the bodies controlling the development of science in the Russian Federation is also confirmed by Clarivate Analytics' latest report on the research fronts of the 2016 calendar year. (Research Fronts, 2016) Despite the fact that the publication landscape of Russian science in foreign databases is growing every year, in this report, Russia appears only on two fronts: "Phosphors for white LEDs" and "Differentiation, functions and metabolism T-cells" ("Differentiation, function, and metabolism of T-cells") with three and one publications, respectively (Fig. 3).

Figure 3: Russian representation in the publication array of research fronts

1. Top countries/regions and institutions producing core papers in the research front "Differentiation, function and metabolism of T cells"

Country Ranking	Country/Region	Core Paper	Proportion	Institution Ranking	Institution	Affiliated Country	Core Paper	Proportion
1	USA	38	97.4%	1	Washington University	USA	9	23.1%
2	Canada	5	12.8%	2	Johns Hopkins University	USA	7	17.9%
3	UK	3	7.7%	3	Harvard University	USA	6	15.4%
4	Ireland	2	5.1%	3	St. Jude Children's Research Hospital - Tennessee	USA	6	15.4%
4	Switzerland	2	5.1%	5	McGill University	Canada	5	12.8%
6	Taiwan	1	2.6%	6	Duke University	USA	4	10.3%
6	Thailand	1	2.6%	7	National Institutes of Health (NIH)	USA	3	7.7%
6	Netherlands	1	2.6%	7	Trudeau Institute	USA	3	7.7%
6	Russia	1	2.6%	7	University of Pennsylvania	USA	3	7.7%
6	France	1	2.6%					
6	Germany	1	2.6%					
6	Australia	1	2.6%					

2. Top countries/regions and institutions producing core papers in the research front "Phosphors for white LEDs"

Country Ranking	Country/Region	Core Paper	Proportion	Institution Ranking	Institution	Affiliated Country/Region	Core Paper	Proportion
1	China	26	59.1%	1	Chinese Academy of Sciences	China	12	27.3%
2	Taiwan	11	25.0%	2	National Taiwan University	Taiwan	8	18.2%
3	Germany	6	13.6%	3	China University of Geosciences	China	6	13.6%
4	USA	5	11.4%	4	National Chiao Tung University	Taiwan	3	6.8%
5	Japan	3	6.8%	4	Philips Technol GmbH	Netherlands	3	6.8%
5	Netherlands	3	6.8%	4	Russian Academy of Sciences	Russia	3	6.8%
5	Russia	3	6.8%	4	University of Munich	Germany	3	6.8%
8	South Korea	2	4.5%					
9	India	1	2.3%					
9	Italy	1	2.3%					
9	Estonia	1	2.3%					
9	Belgium	1	2.3%					

Source: Research Fronts, (2016).



Russian scientists are obliged to take urgent note of the need to take into account research fronts. Studies carried out within their framework should be given preference in selecting funding objects. This can become a point of growth not only for science, but also for the socio-economic development of the country as a whole.

#### 4. Conclusion

Formation of a policy of support for scientific research taking into account the world research fronts for Russian science, is extremely necessary. Financing should be ranked according to the effectiveness of the functioning of a particular subject area. This will make it possible to make a leap in the evolution of scientific knowledge, bring the country to a new technological level and form a positive investment climate. (Minghai et al., 2014) The implementation of such a policy should be based upon the internal audit of research fronts with the statistical data of the Russian Scientific Citation Index. The allocation of local research fronts and their integration into the external environment will give impetus to the development of Russian science and will allow us to confront the modern exogenous challenges of our time.

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# NEW MODEL OF INNOVATION AND TECHNOLOGY TRANSFER

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**Abstract.** The technology transfer process just seems to be easy and simple to do. However, it requires performing many tasks that make it more complicated. This problem is not limited to determining the amount, correct valuation, technology and its commercialization readiness (TRL), but above all to verify the possibility of its absorption by the company. So that the status of the resource assessment of the entity in terms of its ability to implement and the ability of the company to use the acquired technology in the process of creating and selling innovation. As well as defining the function of new paradigms like Circular Economy or Sustainable Development. Which are expected to have a significant impact on business competitiveness in not only a domestic but also international scope. Such paradigms, on a one hand, will force the intensification of companies needs in the fields of acquisition of new technologies or advanced raw materials and increase the scope of innovation in business models. On another hand will increase the usage by the enterprises the factor of co-creation and co-operation into new product development processes. The aim of the article is to present the research conducted so far and to present an attempt to present a model of innovation and technology transfer.

**Keywords:** innovation, technology transfer technology and innovation management

**JEL Classification:** O31, O32, O33

## 1. Introduction

For many micro, small and medium size being innovative means not only delivering new product on the market, but also improving their business processes, both inside the company and outside by integrating them with value chains of companies with whom they cooperate. What is also the basis for making the right choice of the suitable for the company technology transfer model, technology and knowledge absorption and innovation development.

According to the European Innovation Scoreboard 2017 European Union is less innovative than Australia, Canada, Japan, South Korea or United States. Compared to 2010, the innovation performance of the EU has increased only by 2 percentage points in general. At the level of individual Member States, results differ with an increase in performance in 15 countries and a decrease in performance in 13 countries. Such differentiation lead to division EU regions and companies on four categories: Innovation Leader 6 countries, Strong Innovator 6 countries, Moderate Innovation 14 countries (below the EU average) and 2 countries are Modest Innovators. It is assuming that the main reason of such situation is that SMEs companies must have to adapt their processes and technology very quickly to the needs of a rapidly changing competitive environment. Coping with two types of problems. Firstly, intensification of activities in their innovativeness and secondly in access to resources needed to proper course of implementing innovations. Accordance to EU Innovation Scoreboard the average R&D

expenditure in manufacturing is 85% and that score is achieving only by medium-high and high-technologies manufacturing industries. The average score for all core industries is 35%. What is very interesting there is strong dependence between a company size and the percentage of investment in R&D. The smaller the company is, the smaller is the percentage of expenditures in R&D. For example: companies with 250 employees or more have 78% expenditures and those from 1 to 9 employees have only 2% expenditures on average. (European Innovation Scoreboard, 2017)

Choosing the right technology transfer model depends on the many factors. Companies must adjust to the new and continuously changing technological and knowledge-based environment mainly through technology and knowledge absorption and creation innovation. Therefore, today, innovation is a key reason of economic and regional growth. The production of new technology and knowledge at regional level is inspired and facilitated not only by the main R&D inputs, researchers and R&D expenditures, but also by the global knowledge. (Kalapouti & Varsakelis, 2015)

Thus making analysing and understanding technology transfer from universities and others scientific institutions into marketable ideas could be understood as a key element in regional growth. In order to do this firstly we have to take a look on factors which influenced the companies' environment. (Audretsch et al., 2014)

## **2. Factors affecting the modelling of technology transfer**

### **2.1 European Union innovation policy**

European Union policy, which aims to increase the innovativeness of enterprises, and thus the intensification of technology transfer processes is manifested in the form of Regional Innovation Strategy, Smart Specialization policy and creating Regional Innovation Ecosystem.

In the context of Europe 2020, smart specialisation emerges as a key element for place-based innovation policies. Regional RIS3 strategies (Research and Innovation Strategy based on Smart Specialisation) can be defined as follows (Markkula, 2014, A):

- they focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development, including ict-related measures;
- they build on each country's/region's strengths, competitive advantages and potential for excellence;
- they support technological as well as practice-based innovation and aim to stimulate private-sector investment;
- they get stakeholders fully involved and encourage innovation and experimentation;
- they are evidence-based and include sound monitoring and evaluation systems.

Next important factor is a well function innovation ecosystem. According to the Barclay the term 'innovation ecosystem' describes the role of independent factors working together to enable entrepreneurs and allow innovation to occur in a sustained way in a particular location. However, analysing how they develop differently in different places can enable policymakers and business leaders to provide a more supportive environment (Barclays A). Such an environment requires establishment of a system that creates conditions for the efficient functioning of the economy mechanisms that determine the level of its competitiveness, i.e.: creativity - innovation - entrepreneurship requires coordination of many elements essential for innovation processes. It should include (Barclays B):

- formulation of a modern innovation strategy integrating innovation and entrepreneurship objectives and actions, implemented at regional levels,
- building a coherent system of product development, technology transfer and knowledge, consisting of institutions and activities leading to the transformation of knowledge into new products, services, technologies, organizational and marketing solutions and financial instruments to support the commercialization of innovative ideas,
- building social consensus for innovation at the level of local government institutions, R & D entities, societies, entrepreneurs, but also the innovative awareness of education, media and politicians.

By analysing the various options for properly integrating technology transfer results (proper technology transfer model) into the process of developing a regional innovation ecosystem, the concept of Triple Helix [TH] could be used. The concept comprising three actor groups: universities and other research-oriented institutions, industry, and cities and other public-sector organisations. Initially, industry operates in the Triple Helix as the locus of product development and production, government as the source of contractual relations that guarantee stable interactions and exchange, and the university as a source of new knowledge and technology. The process of creating regional innovation ecosystem with respect to the Triple Helix model should means above all (Markkula, 2014, B):

1. More systemic strategic thinking in defining and implementing regional innovation strategies based on smart specialisation:
  - 1.1. Increasing smart city and smart region initiatives;
  - 1.2. Prioritising the regional activities and strengthening the base for focused activities;
  - 1.3. Building critical mass based on European-wide strategic partnerships.
2. Focusing more on societal challenges and as a result, broadening the innovation base:
  - 2.1. Increasing a general motivation towards innovation;
  - 2.2. Stressing the importance of the real-life and real-case approach;
  - 2.3. Moving towards Open Innovation 2.0.
3. Recognising the crucial role of regional innovation ecosystems to be based on the co-creation culture and the network of innovation hubs:
  - 3.1. Creating living labs and innovation test-beds for knowledge co-creation;
  - 3.2. Encouraging bottom-up activities by creating new arenas as innovation hotspots;
  - 3.3. Moving towards experiments, demonstrations and rapid prototyping.

Also remembering that in the current knowledge-based economy orientated for using a potential of smart specialization, higher education should be a strategic channel of technology transfer especially if links with industries are strengthened and a broader matrix of industry-university relationships are formed to span a broad range of activities and outputs orientated on new knowledge and technology utilizations. (Calcagnini & Favaretto, 2016).

Furthermore, literature study shown that the appropriate balance between possibility of technology transfer and firm types depends on a need to move beyond the notion of innovation systems as “the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies” to stimulate innovation ecosystems. Where the innovation ecosystems, in general, concern the “network of diverse actors, including emerging young firms, as well as established medium-size and large enterprises, NGOs, and government.” (Wright, 2014)

## 2.2 Enterprise-driven technology transfer conditions

The conditions of the companies' technology transfer model are hidden in the form of a well-functioning innovation management system. The approach of innovation management system emphasis independence and non-linearity. This mean that firm do not innovate in isolation but with the process of interaction with other organizations ant their customers. And what is important is that almost all innovation processes are not only influenced by the elements of the innovation management system, but also by the complex relation between them e.g. Circular Economy [CE] paradigm and its consequences like new legislation in the field of natural environmental protection

The innovation management system consists of two groups of factors (Kollerup F). The first group include organizational factors related to the creation of an environment conducive to the development of innovation in the enterprise, the accepted form of innovation management as well as the leadership in the development of innovation.

The second group of factors are processes related to the development of innovation, i.e. the process of generating ideas for innovation, the process of innovation together with the evaluation and analysis of individual sub processes as well as an indication of possibilities for its improvement.

Implementing into companies' strategy a principles of innovation management system gives companies a definite range of benefits including (National Standards Authority of Ireland, 2015, A):

- increase in profits from innovation,
- change the approach to problem solving and the new / different set of values,
- help identify and mitigate risk areas,
- combining creativity with the intelligence of the organization,
- increasing value from cooperation with business partners in innovation development,
- increases employee engagement, fosters collaboration and teamwork.

Therefore, it can be stated that the innovation management system consists of all the activities that are necessary in the process of innovation including (National Standards Authority of Ireland, 2015, B):

- organizational conditions,
- leadership in strategy and innovation,
- planning activities to increase the market success of innovation,
- development of drivers and drivers for innovation,
- innovation management process,
- tools for assessing the efficiency of the innovation management system,
- actions to improve the innovation management system,
- innovation management techniques.

To the list of main activities listed above Fagerberg et al. (2004) pointed out next following activities which can be expected as important for the system of innovation management:

- provision of research and development - creating new knowledge, primarily in engineering, medicine, and the nature science,
- competence building as a provision of education and training, creation of human capital, production and reproduction of skills and individual learning used in innovation and R&D activities,

- articulation of the quality requirements emanating from the demand side with regard to new products,
- networking through markets and other mechanisms, including interactive learning between different organizations involved in innovation processes,
- creating and changing institutions – e.g. intellectual property laws, tax, laws, environmental and safety regulation, R&D investment routines etc – that influence innovative organizations and innovation processes by providing incentives or obstacles to innovation,
- incubating activities,
- financing of innovation processes and others activities that can facilitates commercialization of knowledge and its adoption,
- provisions from consultancy services of relevance for innovation processes, e.g. technology transfer, commercial information, and legal advice.

### **2.3 The technology transfer model**

Technology transfer is a rapidly growing field, and this has resulted in a growing empirical base that has shaped policy and practice. (Cunningham et al., 2016) Technology transfer is the transfer of specific technical and organizational knowledge and associated knowhow to the commercial (commercial) use. It is a process of supplying the market with technologies, a special case of communication. It is important to emphasize the interactive nature of this process, which involves a variety of feedback loops between sender and receiver, and new technological and organizational solutions. The transfer is mainly between the science and research sector and the sphere of business, creating a unique bridge between these worlds. (Matusiak, 2008)

The technology transfer process is complex and requires understanding of several aspects, like (Castillo et al., 2016):

- understanding the rate of introduction of new technologies allows for better planning of the supply of inputs
- the speed of adoption and diffusion is affecting the development process and its speed is subject to policy choices
- processes of technological adoption are not only affecting economic performance.

According to Bozeman the effectiveness of technology transfer is appeared by the following five dimensions: who is doing the transfer (transfer agent), how the transfer is done (transfer media), what is being transferred (transfer object), factors that influence the transfer (demand environment), and to whom the technology is transferred (transfer recipient). (Borge & Bröring, 2017)

By modelling the technology transfer process, it is important to remember the increasing importance of co-creation factor in a new products and services creation processes. Engaging the society in the process of innovation development, and thus the choice of technology transfers sources, the company enters a totally different level of value creation for its customers. The concept of society commitment into innovation development process is called the Quadruple Helix (QH) approach.

According to the Committee of Regions the QH approach are grounded on the idea that innovation is the outcome of an interactive process involving different spheres of actors, each contributing according to its ‘institutional’ function in society. Traditional protagonists of the TH are University (UNI), Industry (IND), and Government (GOV). Civil society (CIV) is the

additional sphere included in the QH. Contribution to innovation is envisaged in terms of sharing of knowledge and transfer of know-how, with the helices models assigning and formalising a precise role to each sphere in supporting economic growth through innovation. As society becomes more and more interactive, the role of knowledge as well as the number and scope of spheres to be included in the innovation-generating process have been increasing over time. (Cavallini et al., 2016)

Moreover, the knowledge and technology transfer processes within a QH environment can be considered more complex than those in more traditional environments. In these contexts, governments seek societal value, industry seeks to create value on their triple bottom line, intermediary organisations look to create tangible value for their clients and universities seek to create tangible value through scientific process. (Van Horne & Dutot, 2017)

An interesting example, from the point of view of the subject in this paper, is the results of a study conducted between 2015 and 2016 on a sample of 100 SMEs from Lodz Region.

Conducted research shows that only 31.1% of the surveyed companies recognized innovation only to technological aspects, and 13.1% admit that it does not manage innovation at all. Research also shows that only 21, 3% of businesses are analysing customer needs to launch a new product. The research also showed that 24.6% of the surveyed companies have implemented an accurate product development process, which aims to minimize the time and cost of introducing the product to the market. Interestingly that information about the direction of technology development and the opportunities to obtain them (60% of indications), trends in labor costs, energy and other factors (37%), and technologies offered by universities and knowledge oriented institutions is extrimlly important for compoanies for successful developing their market strategy. The second group of information (at the level of 20% of indications), required by companies to build a strategy, is the range of research services offered by R & D units, development trends in machinery / equipment engineering and market development. In addition, as many as 78% of surveyed entrepreneurs stated that in the period 2007-2014 they did not cooperate with univerities and others knowledge orienteded instytutions, 18% of them cooperated sporadically and only 4% systematically cooperated with R&D entities.

Taking under consideratio, that the Lodz Region is one of many regions of the EU Member States, it seems that identified phenomena and processes may also be perceptible in other regions. It seems that this may be due not only to the lack of understanding of sectoral policies but also to the poorly developed innovation management system in enterprises.

Moreover it can be said that the modern model of technology transfer should not only be based on the companies' internatl potential but also should incorporate elements of cooperation with universities and society in general. Thanks to this, SMEs will be able to create not only innovative products, based on the latest technical and technological achievements, but above all creating the value desired by the buyers. Nat the active collaboration between university and industry is not only important to industrial companies but also to the country and its economic development and competitiveness. (Khorsheed & Al-Fawzan, 2014) For such understood technology transfer could take place the adequate infrastructure on the side of science is required. Infrastructure like universities' TTOs or science park and business incubators. (Escobar et al., 2017) Theoretically such facilities can improve the quality and economic value of university patents by facilitating knowledge flows between academic inventors and market participants. (Kolympiris & Klein, 2017) It is also important because researchers have in general the technological know-how but do not necessarily possess the managerial skills needed



to fill in a patent, establish an R&D agreement with a company or start-up a business. (Escobar et al., 2017). In addition, each R & D entities must have its own IP management and commercialization strategy, which will consist of the following 5 stages: invention disclosure, invention evaluation, definition of IP strategy, filling for IP protections, commercialization. (Jefferson et al., 2017)

Regardless of market conditions or available science infrastructure, while shaping the technology transfer model, attention should be paid to factors like e.g: R&D cost, capital intensity of the market, level of R&D competition, company R&D absorption ability, technology complementary. (Erzurumlu & Erzurumlu, 2013) In addition the dialogue between external sources of knowledge and technology and small and medium-sized enterprises may be rendered difficult by relational-type barriers generated by a distance that may be of a cognitive nature, traceable to the set of basic values, norms and mindsets, or of an emotional nature, traceable to sensations of apprehension and confidentiality. (Giaretta, 2014)

### 3. Conclusion

Previous models of technology transfer were based on using a traditional model - to develop - produce - sell. Where research result was like a developing stage outputs, prototype product or intellectual property was a production outputs - transaction was rarely relational.

However, considering the pace of technology development and the change in approach to environmental policy by implementing the Circular Economy [CE] paradigm, which is not approximated in the paper, it is expected that:

- The technology transfer process will develop towards a long-term relationship between a university and an enterprise - which will allow for continuous technological improvement of the company,
- The technology development process will involve consumers /society/,
- Companies will change their approach to the business model and will start looking for solutions that can be used in a closed circuit, in line with the CE principles, which will contribute to the development of new types of raw materials,
- additional partners in the process of commercialization of technology for universities will be consulting companies - they know what kind of innovation and technology solutions entrepreneurs are looking for,
- We will watch further growth of the number of Spin-Off companies rise.

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# PROCESS APPROACH IN MARKETING COMMUNICATION STRATEGY WITH REGARD TO GLOBAL CORPORATE SOCIAL RESPONSIBILITY

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**Abstract.** This scientific paper focuses on the area of application of process approach in marketing communication strategy focused on social responsibility taking place under conditions of global economy. The number of business entities which develop and implement the philosophy of global social responsibility into their business processes is increasing every year. At the same time, the global social responsibility can be considered a significant innovation tool, which has the potential not only for development of business entities, but also for entire society and its sustainable growth. The topic covers processes of value creation for customers and creation and strengthening of bilateral loyal relationships with clients, professionals and general public. Social responsibility has significant potential for the future, sustainability, and for preserving the favorable living conditions from a global perspective, but also on a local scale, because even smaller projects and activities have impact on their surroundings and influence the future development. The paper covers results from the qualitative scientific research which was carried out as series of in-depth interviews in cooperation with long-time experts in the fields of process management, communication strategy, and social responsibility.

**Keywords:** process approach, marketing communication strategy, social responsibility, globalization

**JEL Classification:** M14, M30, M31

## 1. Introduction to corporate social responsibility

In general, we can say that the potential which CSR brings is in Slovakia not sufficiently utilized. It is true that the philosophy of CSR and sustainable development came here later in comparison with western countries, but in general we can say that business entities are not involving themselves in CSR development to such extent as they could. Also other established companies (in context of Slovakia) connect CSR with expert communication only to a small extent. The potential to communicate innovations remains in many cases unused as well. Businesses could communicate their activities in this area more actively. In addition, they should become more involved in awareness spreading and topic solving. This would help not only with sustainable development, but also with problem solving, involving society in solutions by changing their habits and mindset. The best way to make changes in society and environment is to find a company that would be a role-model for others. Such business entity

can motivate not only the society and public, but also other business entities from the same and competition segment, as well as from a remote segment.

The development of such values can be considered as means of innovation, investment, and further development. *“Innovations significantly affect our life and they have potential to become the driving force for future opportunities of a company. Their visibility is present in almost every human activity. In local and global market context they can be introduced as a tool for sustaining proper development of economy and ensure competitiveness of the company.”* (Salgovicova & Klineckova, 2013)

*“Currently, it can be observed that approaches used by companies to develop the social responsibility are varied. In practice, we observe these seven basic principles that are generated depending on when and under which conditions they arise:*

- *unnatural approach,*
- *cautious approach,*
- *inexpert approach,*
- *expert approach,*
- *enforced approach,*
- *spontaneous approach,*
- *taken-over approach”.* (Blisak & Salgovicova, 2016)

In the previous lines, we mentioned the first, artificial (and sometimes even deceptive) approach, which is likely to last short, i.e. does not have potential for long-term development of CSR philosophy (**unnatural approach**), especially if this philosophy is not enhanced by internal values and vision of a business entity. We also encounter companies with CRS philosophy in place for a long time, where these activities are not communicated very much, or are communicated little on purpose –not to make them look imposed (**cautious approach**). Other businesses are trying to incorporate CSR projects, but they do not communicate these activities professionally, thus losing potential for further development of social responsibility ideas (**inexpert approach**). The opposite of inexpert approach is qualified (**expert**) approach, which suitably and on an appropriate scale utilizes marketing communication tools that help to raise awareness and have prerequisites for successful implementation of these activities. Mostly the industrial companies, which as part of their activities produce emissions and other environmental pollutants, or by accident caused an ecological disaster, must already within their crisis communication take measures to prevent repeated damage and subsequently, they are forced to search for other ways of improving their broken image – **enforced approach**. Within the employee structure of businesses, thanks to aware thinking (of employees or management) also CSR projects promoted “from bottom” can emerge. These projects require from the beginning mainly time and human resources and when they are successfully developed, they can be adopted by the company developing them further (**spontaneous approach**). The last – so-called **taken-over approach** – comes into existence in a situation when a competitive subject gets inspired by another company with well-established CSR philosophy and projects, or with projects that have big potential for successful development, e.g. by a so-called benchmarking method. (Blisak & Salgovicova, 2016)

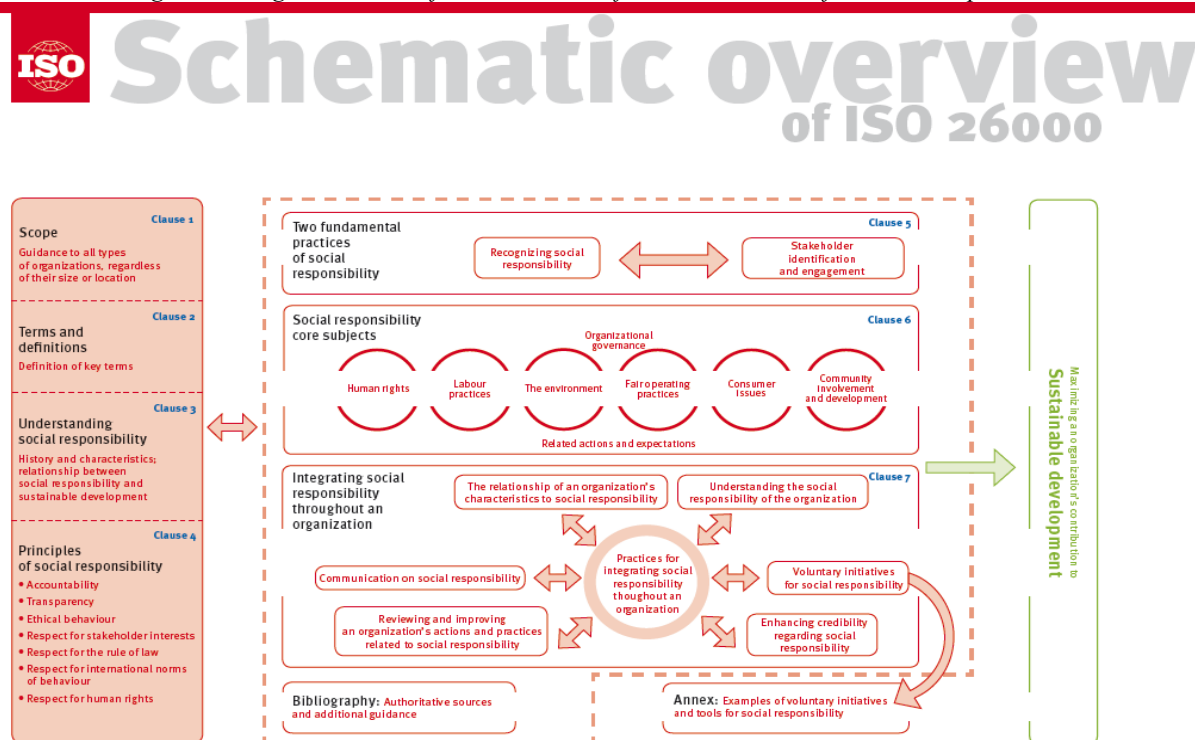
## 2. Current state of the researched topic in Slovakia and abroad

In the following chapter, we analyze the usage of process approach in marketing communication strategy creation with regard to sustainable development; we analyze how this process approach is utilized by organizations and business entities in Slovakia and abroad. The

analysis helps us to better characterize the general view of process approach implementation and to answer the question whether this topic is attractive. In the analysis, we focused mainly on process models of CSR and sustainable development in communication and their impact on individual target groups. A model like this can easily and exactly describe the whole mechanism and influence of processes. (Scherer & Pallazo, 2011; Matten & Moon, 2008)

In general, we can say that the most detailed scheme of social responsibility can be found in scheme of certificate based on international standard ISO 26000 about CSR influence and operation. Even though the model of process approach does not describe more in detail the communication strategy, it captures in its model a direct connection to marketing communication (Fig. 1).

Figure 1: Original scheme of ISO 26000 certificate about CSR influence and operation

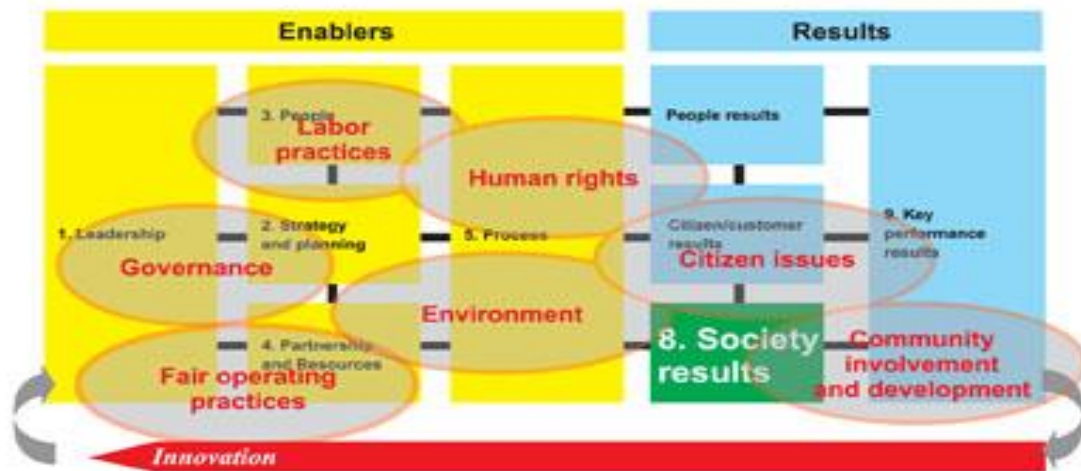


Source: [www.iso.org](http://www.iso.org), (2016).

When doing the analysis, we found in the “Czecho-Slovak Journal Quality and Social Responsibility” an article by Jean-Marc Dochot, the advisor for CAF Belgium (CAF is system tool for evaluation in quality management with regard to social responsibility, designed for public sector). (Timms, 2017)

Included models describe the influence of social responsibility on population and society. CAF tool in its essence focuses on public awareness and development of society. This means that it also influences the business sector, for which it can be an inspiration (Fig. 2 and Fig. 3). Similar to ISO 26000 model, the model of process approach does not capture the creation process of communication strategy as a separate process, but it demonstrates the influence of public awareness and its development. (Jamali, 2010; Muller & Kolk, 2009)

Figure 2: Self-assessment of public functions scheme



Source: [www.casopiskvalita.eu](http://www.casopiskvalita.eu), (2016).

Figure 3: Influence of self-government on its surroundings

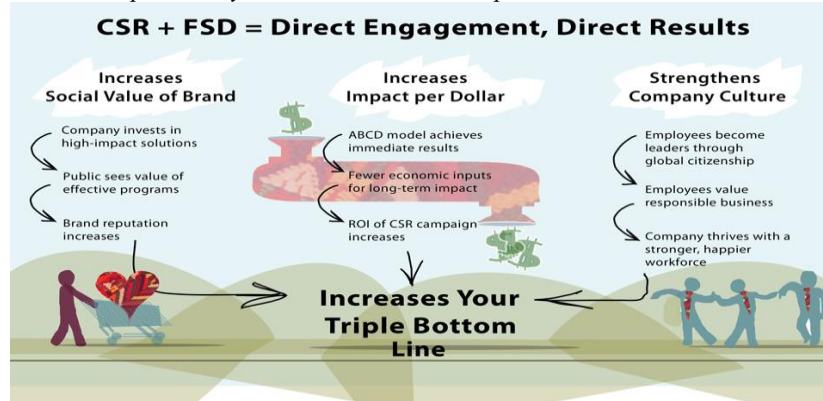


Source: [www.casopiskvalita.eu](http://www.casopiskvalita.eu), (2016).

The following model (Fig. 4) by international organization Foundation for Sustainable Development (with main office in San Francisco, USA) describes the benefits of social responsibility and sustainable development for company culture strengthening, for potential profit increase and potential growth of brand social value. Overall, these processes result in increase of sustainability of the so-called Triple Bottom Line. Again, the model only assumes the process approach in marketing area, but it does not capture it explicitly. Still, it indicates the direct impact of philosophy of CSR and sustainable development on the company and on society in general. When doing the analysis, we have also discovered certain variations of similar models related to sustainable development, but again without capturing the process approach marketing model.



Figure 4: Social responsibility and sustainable development – direct connection, direct results



Source: [www.fsdinternational.org](http://www.fsdinternational.org), (2016).

The Canadian company ConocoPhillips Canada (with main office in Calgary) belongs with its more than a 100-year history to three biggest producers of oil and natural gas in Canada. The company develops philosophy of CSR and sustainable development and at the same time has the own model of approaching sustainability (Fig. 5), in which it focuses on continual improvement of individual approaches leading towards sustainability. It describes in the model the map of sustainable development processes and takes into consideration also the process of communication and “learning” (to build relationships, understand perspectives and transparently provide information about performance). The model speaks about process approach and also about the importance of communicating and making visible own activities, inspiring and educating other subjects about philosophy of sustainability.

Figure 5: “Our Sustainability Approach” ConocoPhillips Canada



Source: [www.cpcsustainability.com](http://www.cpcsustainability.com), (2016).

The company ConocoPhillips Canada develops processes of sustainable development also by the so-called Triple Bottom Line model on sustainability. They enhanced the basic model (which shows economic growth, care for environment and social development) with additional items related to socio-economic influence, eco-efficiency, and socio-environmental influence. It also defines these items more in detail with further processes and activities.

Based on its webpage, ConocoPhillips Canada actively participates in the process of sustainable development and maps individual processes by using the process approach. The company also created its own binding company process model and from the analyzed models so far best describes the process approaches. Even though process approach in creation of marketing communication in these models is not described in detail, it is likely that this



company is developing them. Also we found an interesting model that suggests sustainable and at the same time eco-friendly “energetic transition” at German Technical University in Aachen (Rheinisch-Westfälische Technische Hochschule Aachen). The model focuses on innovative ways of developing solutions for the so-called “cities of the future”. In particular, it develops solutions and energetic scenarios (possibilities of energy supplies) about how to implement sustainable and reliable energy systems together with integration of social and environmental factors. You can find this model on the website [www.comm.rwth-aachen.de](http://www.comm.rwth-aachen.de). This model includes participation of professionals (from the fields of arts, engineering, urban development, social sciences, technical areas, and citizens), where awareness and communication strategy are developed towards citizens. The model describes development and activities related to sustainable “energetic transition” with significant contribution of communication strategy and Public Relations, which help the project to anticipate the public and thus to awareness and gradual acceptance of the project by the public. Even with deeper insight into the model and project characteristics, the processes and process approach are not mentioned there. As this is a new and developing scientific university project (supposedly with potential of impact until 2050), the process approach explicitly for marketing strategy creation remains for now unclear, however, it has big potential for further development of the topic. We may assume that the process of marketing strategy creation is a sub-process of another process – creation of the overall university development strategy.

### **3. Results and discussion**

Based on this partial and the overall analysis of topic of process approach in planning, implementation and control of marketing strategy focused on sustainable development and CSR, we can conclude that business entities engage in social responsibility to various extent and based on situation they try to connect it with marketing communication. We have also noticed that models describing influence of CSR and sustainable development, together with explaining the influence of individual processes, are pushed forward mainly by foundations, non-profit organizations, schools, consulting and coaching organizations, and institutions focused on evaluation of quality management and environmental management. The individual business entities engage only minimally in describing these models of process approach in textual or graphical way. This does not automatically mean that they do not address the topic, but they connect it minimally with communication strategy. On the other hand, we may assume that there are also such companies that have not discovered this topic, have not identified themselves with it yet, or the topic is – for unspecified reasons – unattractive to some business entities. We have not found a model that would directly describe the process approach in creation of marketing communication strategy or solutions for topics of CSR and sustainable development. In the analysis we have found cases that describe the topic only marginally, indirectly, or that anticipate the solution automatically (based on their main activity). Mostly only the basic models of communication processes and their various modifications are available; or basic models of process management (in marketing mainly as model describing orientation on customer needs). We have found several models where social responsibility influences various target groups. The topic is best described in the model of process approach that includes the process on importance of communication (but without further description of processes for creation of marketing communication) created by refinery company ConocoPhillips Canada. We have found out that mainly professional and research publications and monographs are closest to elaboration of the topic of process approach in marketing strategy (with focus on CSR and sustainable development).

## 4. Conclusion

In our research, we further focused not only on analysis of the examined models, but also on qualitative research with representatives of business entities and corporations, who are professionals in social responsibility and sustainable development. We examined the foundation and usability of models of process approach with regard to CSR and sustainable development in marketing communication environment. Subsequently, based on the discovered findings we will create a proposal of methodical steps for application of process approach into creation of marketing communication strategy with regard to CSR and sustainable development and propose a unique process approach model that will incorporate CSR, sustainable development, marketing strategy and innovations in management. After its practical verification with selected business entities, the model should be applicable in environment of small- and medium-sized businesses.

In addition to the suggested and practically applicable model, the contribution of our scientific research should be also the increased interest of business entities in implementation of CSR philosophy. We would like to point out that CSR and sustainable development have in Slovakia a lot of space for application, mainly due to the underused potential of public awareness and education, by which companies could develop the vision and motivate also other business entities and society (general public and professionals), self-governances and state institutions to participate in broad scale of solutions to various issues. Many times also the non-profit organizations are dependent on long-time fight with the issue they are focused on and participation of a business entity could significantly shorten solving of the issue, from which would benefit both the non-profit organization and the company.

Based on the theoretical foundations, analysis of the situation in Slovakia and abroad, based on our research and confirmed assumptions, we have discovered that CSR philosophy is a demanding topic, mainly due to its application. This philosophy has a big potential towards the future for business entities, society, environment, but also for culture of the environment, standard of living, and sustainable development. The complex view and professional approach could ensure for the business entity a successful implementation into company processes and transformation of new and old processes. The discussed topic should demonstrate the contribution of holistic view on process approach. In addition, the knowledge gained from the researched topic (together with methodical approach and individual models) could help with better implementation of philosophy of CSR and sustainable development in business processes. Ultimately, this approach would represent also a more frequent implementation of philosophy of CSR and sustainable development in practice.

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## HEALTH CARE AND HEALTH EXPENDITURE FROM A GLOBAL PERSPECTIVE

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**Abstract.** Health expenditure constitutes a significant part of government and private expenditure in most countries. Its effectiveness can be measured by both objective indicators, such as life expectancy or infant mortality, and subjective perceptions of health status. In member states of Organization for Economic Cooperation and Development (OECD), much progress in health care outcomes has been achieved in recent years. Despite these improvements, important questions about how successful countries are in achieving good results on different dimensions of health system performance remain. In our paper we study the health care outcomes of OECD countries as a function of health care spending, lifestyle variables and available health care resources. Multiple regression analysis is used to model the relationship between these indicators. Available data show that although health care indicators are related to the health expenditure (both government and private), the health outcomes are affected by environmental factors and cultural choices, as well. In our paper we show that higher health spending is usually associated with better health outcomes, however, this relationship is less clear in countries with the highest health spending per capita. Even though data generally indicate the overall improvement in health outcomes in OECD countries, we use the calculated multiple regression model for identification of most important weaknesses and potential threats.

**Keywords:** multiple regression analysis, healthcare efficiency, health expenditure

**JEL Classification:** H51, I15, C30

### 1. Introduction

Public expenditures on health are one of the most important issues for governments in today's world. Healthcare expenditures as a share of GDP are growing in most countries and are putting pressure on public budgets. Because of the combination of rising healthcare demand and public resource constraints, health policy makers have focused on the performance of their health systems. In recent years, many countries introduced reforms to improve the performance of their health systems.

Simultaneously, many scientific papers deal with the efficiency of healthcare systems. The first two reports, (Evans et al., 2001; Tandon et al., 2001), published by World Health Organization (WHO), which estimated health system efficiency for 191 countries between 1993 and 1997, used a panel-fixed effects model to create a production frontier. Consequently, Hollingsworth & Wildman (2003) and Greene (2004) used additional variables to estimate

health system efficiency. (Şenel & Cengiz, 2016) The number of studies on the health system efficiency has increased rapidly over the past three decades. (Hollingsworth, 2008)

Several techniques for measuring the efficiency of health systems were used in the studies, where cross-country comparisons of the relationship between health outcomes and healthcare resources were included. (Varabyova & Müller, 2016) Such international comparisons provide performance benchmarks and identify areas of improvement for healthcare systems of evaluated countries. (Heijink et al., 2012) Most studies use healthcare expenditures as input and life expectancy as output measure. Sample of OECD countries using FDH and DEA method was evaluated by Afonso & Aubyn (2004), frontier techniques were used in Grosskopf et al. (2006) too. Other non-healthcare factors – such as lifestyles, environmental factors, income and education – affect the health outcomes, as well Nolte & McKee (2004), Spinks & Hollingsworth (2005).

## **2. Multiple regression**

Multiple regression analysis is one of the widely used statistical procedures for research. It can be applied to variety types of data, is relatively easy to interpret, and robust to violations of the underlying assumptions. It is used in two distinct, but related purposes: prediction and drawing the conclusions about explanatory variables. (Mason & Perreault, 1991) As a result, researchers often need to assess relative importance of a predictor by comparing the contributions made by other predictors in a particular regression model. (Chao et al., 2008)

When two or more predictor variables are correlated, the interpretation of correlation coefficients, their standard errors or associated t-tests may be confusing and misleading. (Mason & Perreault, 1991) Literature suggests various ways of diagnosing multicollinearity, ranging from simple rules of thumb to complex indices. In our paper we use variance inflation factors (VIF) method. (Stine, 1995)

## **3. Health system efficiency**

In this paper we evaluated the healthcare outcomes of 34 OECD countries using data from their health statistics (OECD, 2017). Since lots of data is still missing for years 2016 and 2015, we used data for 2014.

Health data in OECD statistical database is divided into 12 sections. We selected 17 predictors from 3 most important sections:

- Current expenditure and financing: Voluntary schemes/household out-of-pocket payments as a share of GDP, government/compulsory schemes as a share of GDP
- Health care resources: Total health and social employment, physicians, nurses, pharmacists, physiotherapists, hospitals, hospital beds, computed tomography scanners (CT), magnetic resonance imaging units (MRI), positron emission tomography (PET)
- Non-medical determinants of health: Tobacco consumption, body weight, alcohol consumption, vegetable consumption, and fruits consumption.

We used two most frequently used health status indicators as output: life expectancy of females at birth (in years) and potential years of life lost (for 100 000 females aged 0-69 years old).

### 3.1 Public and private expenditures on health

In the first part of our paper we investigated the influence of health care expenditures on two health status indicators: life expectancy of females at birth and potential years of life lost.

First we constructed the multi regression model in the form

$$LE = Const + \beta_1 \cdot VS + \beta_2 \cdot GS + \varepsilon,$$

where  $LE$  is life expectancy of females at birth (in years),  $\beta_1$  and  $\beta_2$  are the true population coefficients for predictors  $VS$  (voluntary schemes/household out-of-pocket payments as a share of GDP) and  $GS$  (government/compulsory schemes as a share of GDP)  $Const$  is intercept value and  $\varepsilon$  is error term (variable drawn randomly from standard normal distribution).

Since voluntary expenses of US deviate markedly from other observations in the sample, outlier data for United States were excluded from the calculations. (Hodge & Austin, 2004) Results for remaining 33 OECD states are shown in Table 1:

Table 1: Multiple regression model coefficients and confidence intervals

	Coefficients	P-value	Confidence interval	
			Lower 90.0%	Upper 90.0%
$LE$	77.15	0.0000	74.66	79.64
$\beta_1$	0.82	0.0530	0.13	1.51
$\beta_2$	0.69	0.0001	0.42	0.95

Source: Own calculations from OECD data

Resulting multi regression model is:

$$LE = 77.15 + 0.82 \cdot VS + 0.69 \cdot GS \quad (1)$$

Since P-values for all coefficients are smaller than 0.1, all calculated coefficients are different from zero at level of confidence 90%. Coefficients  $\beta_1$  and  $\beta_2$  for  $VS$  and  $GS$  are greater than zero, so there is a positive correlation between life expectancy at birth of females and two predicting variables. As a result, we got that the bigger the expenditures to health system are (both  $VS$  and  $GS$ ), the higher life expectancy of females at birth is. For each state we used calculated coefficients  $\beta_1$  and  $\beta_2$  to determine the predicted values. Current values of life expectancy of females at births), predicted values calculated by the multi regression model and differences between these two values are shown in Table 2. Positive difference suggests that life expectancy for particular state is higher than expected (average) value. Negative difference means that life expectancy is smaller than average value. In case of negative difference both the government and voluntary spendings are not used efficiently. In Mexico, life expectancy should be almost 4 years higher, based on their health expenditures; in Hungary it's almost 3 years. The efficiency of healthcare system is highest in Luxembourg – life expectancy is 3.6 years more than value calculated by the multi regression model.

Table 2: Life expectancy of females at birth – current, predicted and difference [in years]

State	Current	Predicted	Diff.	State	Current	Predicted	Diff.
Australia	84.4	83.79	0.61	Korea	85	82.47	2.53
Austria	84	84.56	-0.56	Latvia	79.4	81.22	-1.82
Belgium	83.9	84.62	-0.72	Luxembourg	85.2	81.61	3.59
Chile	82.5	82.84	-0.34	Mexico	77.5	81.43	-3.93
Czech Republic	82	82.52	-0.52	Netherlands	83.5	84.90	-1.40
Denmark	82.8	84.43	-1.63	New Zealand	83.3	83.87	-0.57
Estonia	81.9	81.62	0.28	Norway	84.2	83.76	0.44

<i>Finland</i>	84.1	83.99	0.11	<i>Poland</i>	81.7	81.69	0.01
<i>France</i>	86	85.10	0.90	<i>Portugal</i>	84.4	83.77	0.63
<i>Germany</i>	83.6	84.98	-1.38	<i>Slovak Republic</i>	80.5	82.09	-1.59
<i>Greece</i>	84.1	82.98	1.12	<i>Slovenia</i>	84.1	83.36	0.74
<i>Hungary</i>	79.4	82.38	-2.98	<i>Spain</i>	86.2	83.76	2.44
<i>Iceland</i>	84.5	83.41	1.09	<i>Sweden</i>	84.2	85.06	-0.86
<i>Ireland</i>	83.5	84.38	-0.88	<i>Switzerland</i>	85.4	85.68	-0.28
<i>Israel</i>	84.1	82.53	1.57	<i>Turkey</i>	80.7	80.27	0.43
<i>Italy</i>	85.6	83.64	1.96	<i>United Kingdom</i>	83.2	84.16	-0.96
<i>Japan</i>	86.8	84.83	1.97				

Source: Own calculations from OECD data

### 3.2 Health system efficiency

In the second part of our paper we investigate how the health status indicators depend on healthcare resources. We selected 17 most frequently used healthcare indicators, as defined in OECD health statistics.

#### 3.2.1 Calculation of multicollinearity

First, we checked 17 predicting variables for multicollinearity using excel spreadsheet with NumXL add-on. Results are shown in Table 3. We used variance inflation factor (VIF) method for determination of multicollinearity. As an additional information, we also calculated  $R^2$  (coefficient of determination of a regression of one explanator on all the other explanators).

Table 3: Multicollinearity test – VIF method,  $R^2$  and multicollinearity test result

Variable	$R^2$	VIF	Present?
<i>Current expenditure: Voluntary schemes</i>	64.5%	2.82	FALSE
<i>Current expenditure: Compulsory schemes</i>	80.9%	5.23	TRUE
<i>Total health and social employment</i>	86.9%	7.61	TRUE
<i>Number of Physicians (per 1000 population)</i>	58.9%	2.43	FALSE
<i>Number of Nurses (per 1000 population)</i>	73.9%	3.83	FALSE
<i>Number of Pharmacists (per 1000 population)</i>	53.9%	2.17	FALSE
<i>Number of Physiotherapists (per 1000 population)</i>	75.8%	4.14	FALSE
<i>Number of Hospitals (per million population)</i>	79.2%	4.80	FALSE
<i>Number of Hospital Beds (per 1000 population)</i>	78.7%	4.69	FALSE
<i>Number of CT (per million population)</i>	88.5%	8.71	TRUE
<i>Number of MRI (per million population)</i>	89.6%	9.59	TRUE
<i>Number of PET (per million population)</i>	64.2%	2.79	FALSE
<i>Tobacco Consumption (Cigarettes per smoker per day)</i>	55.9%	2.27	FALSE
<i>Weight (Obese population. self-reported. in percent)</i>	68.4%	3.17	FALSE
<i>Alcohol (Litres per capita)</i>	49.6%	1.98	FALSE
<i>Vegetables (Kilograms per capita per year)</i>	72.9%	3.70	FALSE
<i>Fruit (Kilograms per capita per year)</i>	67.8%	3.11	FALSE

Source: Own calculations from OECD data

Four predicting variables were identified to have multicollinearity, since their VIF is greater than 5. These variables will be omitted from future calculations. The remaining 13 variables will be used as explanatory variables for multi regression models.

### 3.2.2 Multi regression model

We construct the multi regression model using formula

$$LE = Const + \sum_{k=1}^{13} \beta_k \cdot x_k + \varepsilon \quad (2)$$

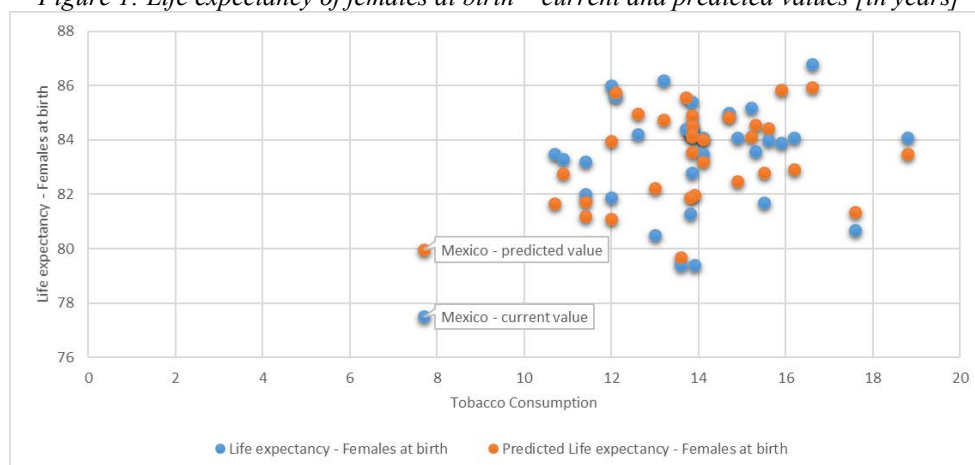
where  $LE$  is life expectancy of females at birth (in years),  $\beta_k$  is the true population coefficient for  $k$ -th predictor  $x_k$ ,  $Const$  is intercept value and  $\varepsilon$  error term. Results of multi regression model are presented in Table 4. P-values smaller than 0.1 were calculated for three predicting variables: number of pharmacists, tobacco consumption and fruits consumption. For these three predictors, there is 90% confidence that estimated coefficients are different from zero. All these coefficients are positive, meaning that the higher number of pharmacists or tobacco consumption or fruit consumption is, the higher life expectancy is. Negative correlation is expected in case of tobacco consumption, however. We will examine the correlation in detail on Figure 1.

Table 4: Multiple regression model coefficients and confidence intervals

	Coefficients	P-value	Lower 90.0%	Upper 90.0%
Intercept	73.60	0.000	65.94	81.26
Current expenditure on health	0.13	0.689	-0.43	0.70
Physicians	0.22	0.725	-0.86	1.31
Nurses	0.09	0.465	-0.12	0.31
Pharmacists	2.50	0.065	0.29	4.71
Physiotherapists	0.62	0.333	-0.46	1.70
Hospitals	0.00	0.973	-0.06	0.06
Hospital Beds	-0.06	0.784	-0.42	0.30
PET	0.17	0.575	-0.35	0.69
Tobacco Consumption	0.31	0.099	0.00	0.63
Weight - Obese population	-0.19	0.104	-0.39	0.00
Alcohol Consumption	0.14	0.310	-0.09	0.38
Vegetable Consumption	-0.02	0.545	-0.08	0.04
Fruits Consumption	0.07	0.087	0.00	0.13

Source: Own calculations from OECD data

Figure 1: Life expectancy of females at birth – current and predicted values [in years]



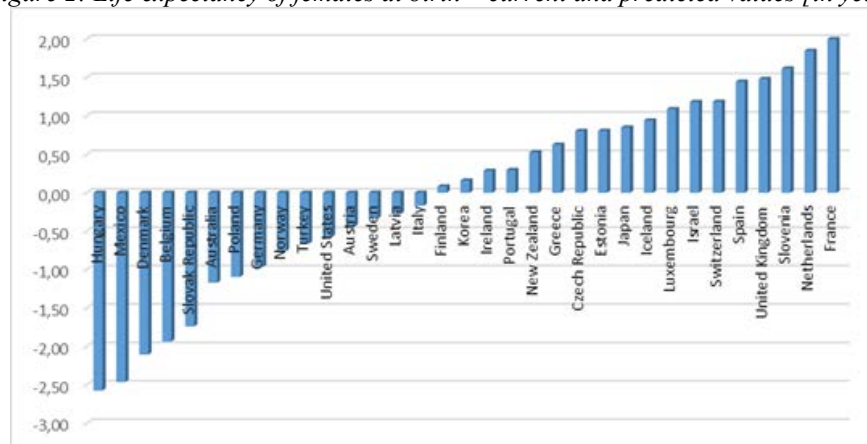
Source: Own calculations from OECD data



We see that life expectancy in Mexico is too small (77.5 years) compared to other states, while tobacco consumption is smallest of all countries (7.7 cigarettes per smoker per day). If we remove this value from our calculations, there is no clear dependence between tobacco consumption and life expectancy, however. Future detailed investigation of the Mexico data is necessary.

Next, based on multi regression model we calculated the predicted values of life expectancy for all 33 evaluated states. Differences between current and predicted values are shown in Figure 2.

Figure 2: Life expectancy of females at birth – current and predicted values [in years]



Source: Own calculations from OECD data

## 4. Conclusion

We calculated two multiregression models. In the first model we evaluated the dependency between years lost and health expenditure. It shows that the health status indicator is positively dependant on both government and private expenditures at 90% confidence level. We calculated that the health system are most inefficient in Mexico and Hungary. In the second part of our paper we used 13 health predictor variables. We identified that only two predictors (number of pharmacists and fruits consumption) are statistically significant at 90% level of confidence. We used the multiple regression model for predicting the values of life expectancy for assessed states. The highest difference between predicted years and current life expectancy is in France (2 years) and Netherlands (1.85 years). In Hungary and Mexico, in contrary, expected years are smaller than predicted values by approximately 2.5 years.

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# THE SIXTH WAVE OF GLOBALIZATION AS A FACTOR OF SUPPORTING THE FINANCING OF EXTREMISM

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**Abstract.** Globalization is not only a global process of economic and political integration, it also interferes with other areas. The hypothesis of Therborn about globalization waves predicts capital migration related to the globalization of information and new communication and information technologies. The virtual movement of financial resources and the monetization of the Internet are becoming increasingly important in connection with the financing of radical Islamist terror. While it is virtually impossible to separate the effects of globalization from other influences (religion, belief, history, dislocation, etc.), since information technology and globalization are tied to all human activities that are often conditioned, it can be hypothesized that the sixth wave of globalization Sense of Therborn hypothesis has a direct connection with the financing of Islamic extremism and ISIS. Particularly in the context of ISIS, it has gradually shifted from the initial forms of quasi-state funding focused on mineral resources mainly on an Iraqi and Syrian territory to forms of monetization of information. In this context, media propagation is being used, not only in ISIS, but also in its near vicinity (Turkey), but globally, especially because of the possible use of infrastructure in a more distant foreign country. The paper analyses and compares the possibilities of monetization of the global information environment in order to prove the connection with radical extremism. Based on the description and classification of forms of monetization of the information environment in a globalized environment, scenarios of financing extremism are modelled. This paper focuses on both direct and indirect forms of monetization that can be used on locally distributed web servers and maps on the basis of simulations of the possibility of capital migration.

**Keywords:** Globalization, Internet, Terrorism, Monetization, Information

**JEL Classification:** F65, G14, L86

## 1. Introduction

V polovině 70. let dochází k výraznému urychlení globalizačních procesů, mezi jiným z důvodů zavádění nových technologií. Následný nárůst tempa těchto procesů, podmíněný technickými a ekonomickými změnami 20. století, zejména rozvojem ICT (informačních a komunikačních technologií), přinesl nekontrolovatelnou mobilitu a virtualizaci ekonomických procesů vyvolaných možností rychlého šíření informací a vznikem nových, informačních a finančních kanálů a toků což podmínilo negativní globalizační jevy, zejména rozpad dlouhodobě vytvářených společenských hodnot a bezpečnostní hrozby v souvislosti s migračními jevy, nebezpečný je rovněž nekontrolovaný tok finančního kapitálu. Proces

destabilizace a rozbití režimů v arabských zemích a nepřiměřené podsouvání prozápadní ideologie nepřineslo stabilitu a demokratizaci, naopak vedlo k rozpadu mocenských bloků a ke vzniku samozvaných a nedemokratických útvarů, zejména IS. Vznik a expanze teroristických uskupení je tedy důsledkem chyb demokratizačních procesů za současného negativního dopadu globalizačních faktorů, zejména nekontrolovaných informačních a finančních toků, které umožňují významnou měrou financování těchto uskupení. Toto je přímým důsledkem šesté vlny globalizace.

## 2. Cíle, východiska, metody

Šestá vlna globalizace (Suša, 2010) je podle Therbornovy klasifikace charakteristická zejména migrací osob, kapitálu, reorganizací ekonomického života, multikulturností sociálního života, novými médii a informačními technologiemi. Urban (2014), používá jinou klasifikaci, zmiňuje globalizaci technologickou a informační, kdy charakterizuje společnost propojenou informačními a komunikačními technologiemi, jejichž společným jmenovatelem je rovněž internet. Je zřejmé, že ICT prostředí generuje nové zdroje financování, globálně, bez vazby na státy a regiony. Monetizace obsahu internetu (MOI) poskytuje možnosti financování vně teroristických uskupení. Existenci financování terorismu v souvislosti s globalizačními faktory zmiňuje např. Spink (2017), který na základě předchozích výzkumů prokazuje, že terorismus po odříznutí zdrojů financování volí alternativní zdroje, v souvislosti s IT a globalizací zmiňuje padělky informačních a multimediálních nosičů. Autoři (např. Tierney, 2017) poukazují na fakt, že teroristické organizace po intenzivní mezinárodní kontrole pozměňují zdroje a metody financování. Predikuje vývoj finančních aktivit ISIS ve smyslu zefektivnění sociální podpory (na základě islámského práva) a využití nadnárodních zdrojů na základě poklesu mocenského vlivu. Základní metody výzkumu tvoří deskripce, komparace, modelování a analýza. Z důvodu omezeného rozsahu příspěvku jsou veškeré obrázky, tabulky a grafy umístěny na [http://pracres.eu/?page\\_id=299](http://pracres.eu/?page_id=299) v pořadí a s názvem, tak, jak jsou uváděny v příspěvku. Cílem příspěvku je prokázání souvislostí mezi šestou vlnou globalizace a financováním extrémismu.

## 3. Radikální globální extrémismus - IS

Islámský stát (IS) je radikální islámská teroristická organizace, která je typickým produktem šesté vlny globalizace. Vznikla na základě otevřenosti informací, pohybu osob a zboží a toků kapitálu, jako důsledek importu prozápadních idejí do prostředí islámu označovaného jako „Arabské jaro“. Postupnou invazí na částech území států Iráku (2006-2013) a Sýrie (2009), vyhlásila samozvaný IS. Hnutí nazývalo IS v Iráku a Levantě (ISIL) resp. IS v Iráku a Sýrii (ISIS), následně IS. Cílem bylo obnovit chalífát na územích historicky pod muslimskou vládou. Od začátku roku 2014 působil také v Lybii. Na podzim 2014 IS oznámil rozšíření své působnosti na 5 provincií ležících mimo oblast Sýrie a Iráku, součástí chalífátu měly být tři vilájáty v Libyi a jeden sinajský a území v Egyptě, Saúdské Arábii, Jemenu a Alžírsku. V únoru 2015 přešla k IS část stoupenců Al-Káidy v Jemenu. Od roku 2016 postupně přichází o území. Vývoj IS je chronologicky zobrazen na Obrázku 1 až 4. I přes spojenecké aktivity ovládli v červenci 2017 syrskou provincii Idlib džihádisté ze skupiny Haját Tahrír aš-Šám (HTS). Rozloha území IS dosáhla přes 90 tisíc km<sup>2</sup>, v červnu 2017 IS ztrácelo více než 60% území oproti lednu 2015. (BBC, 2017) V letech 2014 - 2015 uváděly odhady 6 mil. obyvatel na přímo ovládaném území, později až 10 mil.. Expanzní politiku dokládá i mapa na Obrázku 5 a 6, ve které si IS nárokuje severní Afriku, Blízký východ, Španělsko, Balkán, Krym, Kavkaz a část Indie.

#### 4. Globální islamismus a informační prostředí

IS vychází z islámského extrémismu (Novinky, 2017), který je zdrojem globální teroristické hrozby. V 2015 žilo v západní Evropě téměř 20 mil. muslimů, některé statistiky uvádí, že cca 300 mil. muslimů žije v zemích, kde není islám nejrozšířenějším náboženstvím, v Evropě počty muslimů přesahují 5% populace, největší podíl islamistů v Evropě je v nejvyspělejších zemích (Německo 4,8; Francie 4,7; Británie 3 mil., viz Obrázek 7). Muslimská populace tvoří téměř čtvrtinu světové populace. Obrázky 8 a 9 ukazují rozložení světové muslimské populace. Z Obrázku 10 je patrné nebezpečí tezí rozpínání islámu (džihád mečem a invazí), včetně identifikace 11 nejradičálnějších ohnisek (extrémistické a teroristické skupiny). Na Obrázku 11 je pak rozložení radikálního islámu v roce 2015. Radikalismus Islámu ukazuje Obrázek 12, kde je patrné prolínání islámu do právního systému a zavádění práva šaria. Vzhledem k faktu, že nejvíce evropských imigrantů tvoří uprchlíci z islámských oblastí (cca 70%, Obrázek 13), může se v souvislosti s migrační krizí podíl muslimského obyvatelstva v Evropě dále měnit, v roce 2016 získalo právní ochranu v zemích EU přes 770000 uprchlíků, (r. 2015 asi 330000). Nejvíce žádostí (přes 445000) kladně vyřídilo Německo. (Info.cz, 2017) Islám je nejvíce se rozvíjející náboženství, některé zdroje predikují v roce 2050 počet muslimů 2,76 mld. osob (Fig. 14). Helgilibrary, 2014)

#### 5. Islamismus a informační prostředí

Globalizace informačního prostředí přináší fenomén sociálních sítí. Sociální média jsou široce používány náborovými pracovníky ISIS a umožňují oslovit především mladou populaci, anonymní forma umožňuje idealizaci prostředí a názorů. O rozsáhlosti a intenzitě informačních toků vypovídá mapa zobrazující místa, odkud přicházeli rekruti IS. Z Obrázku 15 je zřejmé, že počet rekrutů z Francie převyšuje počty islamistů z arabských zemí, např. z Libye, Egypta či Libanonu. Je zřejmé, že prostředí Internetu je důležitým zdrojem informací a platformou komunikace. IS pomocí sociálních sítí, jako Facebook, Twitter, peer to peer aplikace, email a systémy pro sdílení obsahu oslovuje miliony osob po celém světě. (Awan, 2017; Mirea, 2016) V další fázi jsou vytvářeny www stránky pro specifické cílové skupiny se specializovaným, zejména propagandistickým obsahem. Digitální propaganda dokázala motivovat více než 30000 lidí ke konverzi k IS. (Extremist, 2017) V této fázi se vytvořila masivní klientská základna, vhodná pro monetizaci obsahu, jako jedna z možností financování IS (obecně extrémismu). O aktivitě extrémního islamismu v oblasti IT svědčí fakta, že mezi zářím a prosincem 2014 bylo v různých časech aktivní nejméně 46000 Twitterových účtů pro ISIS, 20% používalo angličtinu, 75% arabštinu, většina účtů byla založena v Saudské Arábii, většina příznivců ISIS se nacházela v oblastech, které skupina kontrolovala, počet denních tweetů (komunikačních záznamů) byl okolo 200000. V roce 2016 došlo k nárůstu Twittrových účtů o 60%, počet odstraněných účtů se zvýšil na 700000. Twitter uvádí, že v posledních šesti měsících roku 2016 zrušil 376890 účtů za porušení týkající se podpory extremismu. Komunikace probíhala v drtivé většině z mobilních telefonů, 69% ze systému Android, 30% z Apple. Od roku 2014 blokuje Irák Facebook a Twitter ve snaze omezit ISIS. To podmínilo posun k nástrojům Google+ (Kalendář Google, Dokumenty ap.). Alternativně IS používá síť VKontakte (2. největší síť v Evropě). ISIS se také pokoušelo vlastní vytvořit vlastní sociální síť. Datové zdroje, ze kterých byla získána data použita v kapitole, jsou v tabulce 1.

## 6. Financování ISIS

ISIS prvotně finančně i materiálně podporoval Kuvajt, Saudská Arábie, Katar apod. V roce 2014 ISIS disponoval částkou 2,2 mld. dolarů, pravidelné příjmy byly odhadovány na 1,5 až 2,5 mld. dolarů ročně, denní příjmy na 2 až 3 mil. dolarů. (Security magazin, 2014) Podle Brendana (2017) generoval ISIS v roce 2014 1 – 3 mld. dolarů. Patria Online (2015) uvádí 10 základních zdrojů financování ISIS. Primární příjmy jsou z ropy. V Sýrii IS získává zhruba milión dolarů denně, podle jiných zdrojů je odhad ročního zisku IS z prodeje ropy odhadován na půl mld. dolarů, obchodování probíhá pomocí černého trhu a hawaly (Aktualne.cz, 2017), ofenzíva proti IS snížila tržby ISIS údajně až na polovinu<sup>1</sup>. Dalším zdrojem ISIS jsou daně tvořené 2,5% příjmu nebo výpalné (podle některých zdrojů až 20 %). (Reflex, 2016) Křesťané mají samostatné výkupné, tzv. jizyah. Podle některých odhadů IS získal v roce 2014 na daních a s pomocí vydírání 600 mil. dolarů, do roku 2016 se zisk zvyšoval podle zabíraného území. Značným zdrojem jsou příjmy ze zemědělství, odhadem 200 mil. dolarů ročně a z nerostných surovin (zisk z prodeje až 350 mil. dolarů ročně). Příjmy za rukojmí a výkupné se pohybují v řádech desítek milionů dolarů, příjmy ze sponzoringu a darů nejsou podle Patrie prokazatelné, podle jiných zdrojů (Klub investoru, 2015) se pohybují okolo 5% z příjmů. Příjmy z prodeje památek, se odhadují na 100 mil. dolarů ročně. Značný profit měl IS z bank na dobytém území, především v Mosulu, kde mohl získat podle Patrie 875 mil. dolarů, celkem pak 1,5 mld. dolarů. Mezi další zdroje s neprokazatelnými příjmy patří prodej nemovitostí i movitých věcí, pronájem nebo prodej nemovitosti usmrčených, hotovost a finance rekrutů ze západu a zisky z obchodování s lidmi. Vzhledem k nejednotnosti datových podkladů uvádí tabulka 2 další zdroje vztahující se k financování IS. Pesimistické a optimistické trendy financování jsou v tabulce 3 a grafech 1 až 3, vývojové trendy jsou počítány pomocí polynomu druhého řádu s predikcí jedné periody. Jak bylo dříve zmíněno, odhady příjmů IS se značně liší, např. server Echo24.cz (2015) uvádí dále příjmy z konfiskovaného majetku ve výši 44,7%, zatímco z prodeje ropy pouhých 27,7%.

## 7. Monetizace obsahu internetu jako zdroj financování

Šestá vlna globalizace je charakteristická značným podílem informační globálního prostředí a finančních toků v tomto prostředí. Takto lze získat finance z libovolných destinací, nikoli pouze z oblastí pod vládou IS. Islám slouží jako členská základna. Prokázáno je využívání IT, zejména sociálních sítí, pro náborů a propagandu. Z Grafu 4 plyne, že v arabských zemích je značné tempo růstu počtu připojení k Internetu, Spojené Arabské Emiráty a Saudská Arábie dokonce dosahují západoevropských hodnot. Pokud proložíme hodnoty lineárními rovnicemi přímky, zjistíme, že vyspělé země (např. Francie, Německo, Velká Británie) mají směrnici přímky okolo 1,4 (Graf 5). Naopak, silně muslimské země jako Irán, či Saudská Arábie mají směrnici 5,47 a 6,47, Turecko pak téměř 3 (Graf 6). Na území IS je pak nárůst méně strmý, přesto větší než v západoevropských zemích (Irák 3, Sýrie 1,9, Graf 7). Na Grafu 8 je následně predikován vývoj internetu v Iráku, kdy za předpokladu exponenciálního růstu by úroveň západoevropských zemí byla dosažena do 4 let, v případě polynomického rovnice trendu by pak dosáhla do 4 let téměř 50%. Zvýšení tempa růstu se dá předpokládat, protože i přes válečný konflikt došlo v roce 2013 k nárůstu tempa (Graf 9, směrnice 2,2, levá část, roky 2010-2013, navýšení na 4, pravá část, roky 2013-2016). Dynamiku zobrazuje tabulka 4, je zřejmé, že země

<sup>1</sup> Aktualne.cz uvádí 7 prioritních – zabavené (451 mil. \$), ropa (745 mil), daně (294 mil), zemědělství (200 mil), černý trh s uměním (100 mil), výkupné (40 mil), dary (40 mil)

středního východu tvoří 3,3% populace a 3,8% uživatelů, nicméně nárůst uživatelů v roce 2017 byl téměř 4400% oproti roku 2000, blíže Graf 10 a 11. Z Grafu 12 zřejmé, že arabské státy mají rovněž druhý nejvyšší podíl mladé populace (15-24), která tvoří více než čtvrtinu uživatelů Internetu. V souvislosti s financováním IS je dále podstatné si připomenout, že značná část uživatelů Internetu potenciálně podporujících IS se bude rekrutovat ze zemí, z nichž se v minulosti rekrutovali Islamisti (viz dříve, Obrázek 15). Podíl sympatizantů se bude dále odvíjet od migrace a počtu azylantů (viz dříve, Obrázek 13). Lze tedy vyvodit, že se jedná o přibližně 2 mld. muslimské populace (viz dříve Obrázek 14), dislokované převážně do severní Afriky, a jihozápadní Asie (viz dříve Obrázek 9). Jak plyne z tabulky 5, srovnávající procenta muslimské populace a procenta osob využívající Internet, lze predikovat, že počet osob využívající Internet v muslimských zemích, tedy potencionálních uživatelů sociálních sítí a www stránek s muslimskou tematikou je téměř půl miliardy. Lze předpokládat, že monetizace bude směřována na skupinu 15-24 a bude oslovovat více než 300 mil. potencionálních uživatelů Internetu. Je tedy zřejmé, že se jedná o poměrně značné nebezpečí, které může diametrálně změnit financování IS, potažmo financování teroristických organizací. Dominantním modelem MOI financování prodej reklamního prostoru. (Li et al., 2012) Jako nejziskovější se ukazuje nepřímá monetizace na sociálních sítích, což potvrzuje např. Mureta (2012) a Zajc (2015). Internetová reklama v roce 2017 má tvořit 34,0% z celkových výdajů na reklamu. Bližší popisy k některým nástrojům uvádí např. portál Monetizace. (Monetarizace, 2017) Tabulka 6 uvádí přehled vybraných portálů zabývajících se monetizačními modely, strategiemi a statistikami. Poměrně značná dynamika v segmentu sociálních sítí vede v současnosti k největšímu procentu využívání sítě Facebook, Instagram a Snapchat. (Click.cz, 2017) Graf 13 ukazuje procenta využívání sítí, Graf 14 následně denní přístupy v síti Instagram a Snapchat. Vyjdeme-li ze srovnání výkonů reklamy v České republice, pak Internet využívá přibližně 8 mil. obyvatel (76,48% populace). Výkon internetové reklamy byl v roce 2016 v objemu 19,7 mld. korun, což je 31% nárůst potvrzující rostoucí trend online forem inzerce. Největší část inzertních výdajů připadla na celoplošnou (display) reklamu (14,2 mld. Kč), Dále reklama ve vyhledávání (4,7 mld.) a řádkové inzerce (0,9 mld.). Poměr mobilní reklamy k Internetové byl 88%:12%. Význam podílu mobilních monetizačních aplikací zmiňuje např. Miguel & Abarca (2016). Takto lze následně simulovat výkon MOI pro dříve zmíněnou muslimskou populaci a procento uživatelů. Vzhledem k větší dynamice nárůstu počtu uživatelů lze výsledky považovat za pesimistický odhad. Vyjdeme-li z přepočtu koruny vůči dolaru 1:25, pak lze stanovit výkon internetové reklamy v roce 2016 přibližně na 0,18 mld. dolarů na milion osob při využití Internetu 100% populace. Při přepočtu výkonu do segmentu reklam na sociálních sítích lze předpokládat tedy 300 mil. osob ve věku 15-24, lze pak predikovat zisk téměř 55 mld. dolarů s velkou pravděpodobností meziročního růstu.

## 8. Diskuse

Je pravděpodobné, že ISIS může expandovat do zahraničí za účelem zisku finanční podpory. (Tierney, 2017) Tato podpora může být i formou monetizace internetového obsahu. IS může dosáhnout obdobného efektu jako u využití IT pro rekrutování nových členů. Spojenecké úspěchy vedoucí k územní eliminaci ISIS mohou podmínit přesun ISIS do jiných zemí, ve kterých jsou aktivní džihádistické organizace a kde se dá dále bojovat, zejména do Jemenu, Somálska nebo Libye. IS přichází o území, dál ale úspěšně působí na Internetu. Po rozpadu IS nelze považovat MOI jako jediný, resp. majoritní zdroj příjmů. Jaafar (2016) i do budoucna vidí spíše provázanost na regionální podporu financování a uvádí zdanění opakujících se příjmových toků (jako je např. zemědělství) v oblastech s radikálním islámem. Zdroje

financování terorismu pochází především ze segmentu praní špinavých peněz, což lze využívat i po případném pádu IS. (Hamin, 2016; Mugarura, 2016) MOI má obdobný charakter jako praní špinavých peněz, dokonce může být jedním z jeho nástrojů. Je obtížně prokazatelná a boj proti ní může vyvolat kybernetický terorismus. Obecně lze konstatovat, že v rámci IT se soustředil boj s extrémismem do roviny odstraňování obsahu. Internetové společnosti používají sofistikované technologie a lidské recenzenty, aby označili a odstranili extrémistický obsah vyjadřující podporu terorismu. V roce 2015 bylo odstraněno 92 milionů videí, pouhé 1% bylo však odstraněno z důvodu terorismu nebo porušování nenávistných výroků. Facebook, Microsoft, Google a Twitter se na konci loňského roku spojily a vytvořily společnou průmyslovou databázi unikátních digitálních otisků pro snímky a videa, které produkují nebo podporují extremistické organizace. Tyto otisky pomáhají firmám identifikovat a odstranit extrémistický obsah. Twitter identifikoval 75% potenciálně extremistického obsahu prostřednictvím vnitřních nástrojů Twitteru, jen 2% byla odebrána z důvodu žádostí vlády. Je zřejmé, že v oblasti IT je identifikace a boj proti zneužívání Internetu prozatím ponechán v rukou poskytovatelů těchto služeb. Pro důsledné zabránění zisků z monetizace však bude nutná provázanost s bankovním systémem a podpora státních institucí. Existují studie, (Eit, 2016) které upozorňují, že v rozhodování západních médií chybí racionalita a odpovědnost, pokud jde o riziko potenciálních aktivit ISIS.

## 9. Conclusion

Je zřejmé, že likvidace IS je očekávána, je ale také zřejmé, že řešení nebude akceptovatelné pro všechny zainteresované strany. V této souvislosti, z pohledu financování IS, je více než patrné, že strategické zájmy převažují nad ochotou řešení konfliktu. Například nedošlo během války k útokům na ropná pole, byť zisky z nich tvořily značný podíl financování IS. Rovněž data a informace jsou účelově zkreslovány. V rámci IT se soustředil boj s extrémismem do roviny odstraňování obsahu, preferuje se prevence, například rušení či blokace domén<sup>2</sup> a není důsledně analyzováno financování extrémismu a terorismu. Je nutné si uvědomit, že monetizace obsahu je trvale podceňovaná a dokonce není zahrnuta do potenciálních příjmů teroristických organizací. V souvislosti s šestou globalizační vlnou jsou však prokazatelné souvislosti mezi financováním formou monetizace obsahu a rozvojem IT jako globálním jevem. Je zřejmé, že monetizaci by měla být věnována obdobná pozornost, jako praní špinavých peněz, je potřebné zvážit globální charakter Internetu jako prostředku pro finanční toky. Nebylo prokázáno, že šestá vlna globalizace ve smyslu Therbornovy teorie má přímou souvislost s financováním islámského extrémismu a ISIS, byla však prokázána možnost takového zdroje financování.

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<sup>2</sup>Například prohlížeč Internet Explorer [www.jihadica.com](http://www.jihadica.com) blokuje jako nález škodlivého obsahu



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## EUROPEAN POVERTY AS ONE OF THE UNDERLYING GLOBAL PROBLEMS

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**Abstract:** One of the key challenges of a globalized world could be the problem of poverty. On the basis of comparisons and descriptions, we can observe and demonstrate links (more or less obvious) between poverty and globalization phenomena, including mass influxes of migrants and refugees, but also trafficking in human beings, arms, drugs and international and local terrorism. Despite the fact that today we can assume that poverty affects only developing countries, according to Eurostat statistics, one-quarter of European Union citizens are at risk of poverty or social exclusion. The European Platform against Poverty and Social Exclusion, which is one of the seven Europe 2020 flagship initiatives for smart, sustainable and inclusive growth, is also illustrated by the importance of European poverty. Although "European poverty" is only relative and cannot be compared to the poverty of the global format, it can be seen as a brake on social development with the consequences of social exclusion of individuals. The imaginary scissors among the rich and the poor are constantly opening up. There are many indicators of poverty measurement, one way of assessing income levels in relation to average income in a given country. People who receive income below this threshold are considered socially necessary. Another option is measurement through revenue and consumption. The paper deals mainly with the analysis and comparison of the development of selected indicators of poverty in EU countries, modeling and clustering according to these indicators.

**Keywords:** Globalization, European, Poverty, Analysis

**JEL Classification:** E24, F69, I32

### 1. Deskripce evropské chudoby

V literatuře se často setkáváme s pojmy "absolutní chudoba" a "relativní chudoba". Absolutní chudobu (známou také pod pojmem „extrémní chudoba“), najdeme především v zemích globálního Jihu, Severu se týká především chudoba relativní. Evropská chudoba ani zdaleka nenabývá rozměrů extrémní chudoby, kdy cca 1,4 mld. obyvatelstva vlivem špatného přístupu k pitné vodě, potravinám či nepropracovanému sociálnímu systému žije v chudobě s příjmem méně než 1,25 USD na den. (Anupama, GVa Deb, UK, et al., 2016) Oproti tomu jsou evropští obyvatelé bohatí. Pojetí evropská chudoba nelze omezit pouze na materiální strádání, ale hrozí sociální vyloučení. Přestože je možné evropskou chudobu považovat za relativní, je podle Strategie 2020 jedním z dílčích problémů, který je již od 80. let minulého století v popředí zájmu sociální politiky a výzkumu v zemích EU. V rámci inkluzivního růstu postavila Komise EU boj proti chudobě do centra hospodářské agendy zaměstnanosti a sociální agendy strategie Evropa 2020. Cílem Strategie Evropa 2020 je snížit počet postižených nebo ohrožených chudobou, popřípadě sociálním vyloučením, o nejméně 20 mil obyvatel, přičemž členské státy si při stanovení svých národních cílů mohou vybrat ze tří ukazatelů: lidé ohrožení

chudobou, lidé ohrožení hmotnou deprivací a lidé žijící v domácnostech nezaměstnaných. (Ayllon & Gabos, 2017)

Existuje mnoho indikátorů pro měření chudoby, ne všechny jsou dostatečně přesné a z pohledu socio-ekonomických rozdílů globálního prostoru jsou již pro některé země zastaralé. V minulosti byla chudoba měřena na základě ekonomických veličin. Nejčastěji je využíván organizacemi pro měření chudoby relativní ukazatel „příjmová hranice“ nebo také „práh chudoby“, stanoví úroveň příjmů ve vztahu k průměrnému (popř. medián) příjmu v dané zemi. (blíže Kamanou et al., 2005) Například OECD používá za hranici chudoby příjem pod 50% mediánu národního ekvivalizovaného disponibilního příjmu, EUROSTAT (EU-SILC) hranici pod 60% mediánu příjmu. Vzhledem k tomu, že se evropská chudoba stanovuje v Eurech, jsou hranice chudoby v jednotlivých zemích EU rozdílné.

Statisticky byla prokázána silná korelace mezi nízkými příjmy a mnoha ekonomicko-sociálními kritérii. Například ti s nejhorším zdravím a nejnižším sociálním statutem, mají tendence pocházet ze spodku rozdělení příjmů. Nedostatek peněz tedy slouží jako hrubá, ale kvantifikovatelná náhrada pro spoustu deprivací. Literatura (Nowak & Scheicher, 2017) se však ohrazuje proti použití peněžního faktoru jako jediného k hodnocení chudoby a apeluje na potřebu vnímat problém chudoby jako problém multidimenzionální (Alkire & Roche, 2014, 2017). Z těchto důvodů lze příjmovou chudobu považovat za jednu z mnoha dimenzí chudoby a specifikovat chudobu z různých pohledů. (Ivančíková & Vlačuha, 2012) Existuje řada konceptů měření chudoby, které zahrnují kombinaci kritérií jako je gramotnost (Cavaco, 2016), míra vzdělání, přístup lidí k pitné vodě, zdravotní péče, rozdělení bohatství a příjmů v zemi, očekávaná délka dožití nebo primárními výzkumy aj. Jedním z konceptů pro poměření chudoby je HPI – *Human Poverty Index*, zahrnující rozdílná kritéria pro rozvíjející se a rozvinuté země (blíže Gogu & Turdean, 2010). V současné době se za nejpropracovanější považuje globální index MPI - Multidimenzionální index chudoby (*Multidimensional Poverty Index*), který měří kombinaci deprivací a zahrnuje tři dimenze: zdraví, vzdělání a životní standard, vyjádřené pomocí 10 ukazatelů. (Selim, 2016) Problémem konstrukce indexu, je tak jako u většiny, absence tvrdých dat.

## 1.1 Vývoj chudoby v zemích EU28

Z výsledků EUROSTATU z roku 2015 vyplývá, že chudobou bylo ohroženo cca 191 mil obyvatel (23,8% obyvatel EU) oproti roku 2010 došlo k 0,1% nárůstu. Mezi nejohroženější skupiny v rámci EU28 patří podle studie nezaměstnaní (44,6 %) a rodiče samoživitelé (32,5%). Chudoba ale hrozí i lidem pracujícím na částečný úvazek, přistěhovalcům, velkým rodinám, starším lidem či lidem s nižším vzděláním. (Politikberatung, 2017) Vyšší procento obyvatelstva je postiženo v periferiích (20,3%) než hustě obydlených oblastí (16,4%). Podobně jako kouření, obezita nebo cukrovka je chudoba zdravím škodlivá.

V roce 2015 se pohybovalo riziko ohrožení chudobou (práh chudoby 50% medián) na 10,8% (54,197 tisíc obyvatel EU28) a jeho úroveň po období stagnace (2010; 10,2%, 2011-2013; 10,2%, 2014; 10,8%) narůstalo. Přestože dochází k postupnému nárůstu příjmů, počet ohrožených chudobou narůstá. Tento nárůst je vyvolán rostoucí příjmovou nerovností. Zvyšující se hodnota GINI koeficientu,<sup>1</sup> doprovázená rostoucí hodnotou S80/S20 (rozdělení příjmů v 1 a 5 kvantile), vypovídá o postupném rozevírání příjmových nůzek.

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<sup>1</sup>Giniho koeficient slouží k měření rozdělení bohatství a příjmů v zemi, čímž měří stupeň sociální nerovnosti. Pohybuje se v hodnotách od 0 do 100. Hodnota 0 znamená rovnoměrné přerozdělení. Čím je koeficient vyšší, tím je přerozdělení nespravedlivější.

## 2. Index chudoby HPI

Řešená problematika spadá do období 2010 – 2015, ten je posledním rokem disponujícím ucelenou časovou řadu. Primárním cílem je seskupit regiony EU podle postižení chudobou, chudoba je stanovena pomocí indexu HPI-2. Index HPI-2 se jeví jako vhodný nástroj pro komparaci chudoby zemích EU28, je primárně určen pro regiony s velmi vysokým lidským rozvojem (HDI index lidského rozvoje  $\geq 0,8$ ). Do analýzy bude zahrnuto i Bulharsko (HDI = 0,794; 2015), které spadá do skupiny vysoce rozvinutých zemí. Mezi agregáty HPI-2 (1) patří:

- Míra dlouhodobé nezaměstnanosti v % (déle než 12 měsíců) ( $P_1$ ), podíl dlouhodobě nezaměstnaných na celkovém počtu aktivních obyvatel,
- pravděpodobnost nedožítí se 60 let ( $P_2$ ) je vedena jako počet úmrtí do 60 let/1000 obyvatel. Statistika uvádí tento ukazatel v pětiletých intervalech od roku 1950 s prognózou do roku 2100, z tohoto důvodu byl použit ukazatel pravděpodobnosti úmrtí mezi 15 a 60 lety na 1000 obyvatel, který byl aproximován na podíl pravděpodobnosti úmrtí mezi 15 a 60 rokem k počtu obyvatel,
- míra rizika příjmové chudoby obyvatelstva pod hranici 50% mediánu upraveného disponibilního příjmu domácnosti v % ( $P_3$ ),
- míra funkční negramotnosti dospělých v % ( $P_4$ ),

$$HPI-2 = \left[ \frac{1}{4} * (P_1^\alpha + P_2^\alpha + P_3^\alpha + P_4^\alpha) \right]^{\frac{1}{\alpha}} \quad (1)$$

kde:  $\alpha = 3$

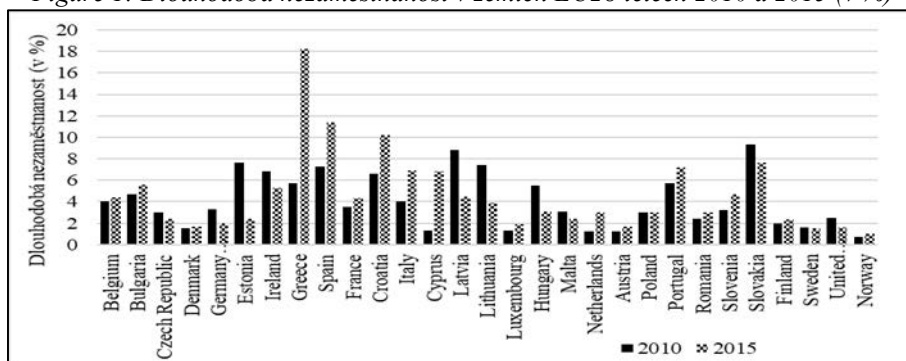
Vzhledem k absenci časové řady funkční negramotnosti, budeme předpokládat, že ukazatel je konstantní =100%. U hodnoty indexu HPI-2 (HDI, 2016) platí, že čím vyšší je hodnota indexu HPI, tím více chudoby a zaostalosti v daném státě přežívá. Dále bylo realizováno shlukování podle vývojových tendencí podle metodiky Kadeřábkové a Kahouna (2007), kdy jsou standardizovány hodnoty v intervalu [0-100] a následně zařazeny regiony do kvadratu I až VI (blíže viz tabulka 1).

### 2.1 Míra dlouhodobé nezaměstnanosti

V roce 2015 bylo dlouhodobě nezaměstnáno v EU28 10 933 tisíc obyvatel tj. 48,1% z celkově nezaměstnaných (9 637 tisíc; 2016). Po letech růstu (2010 - 2013) od roku 2014 podíl dlouhodobě nezaměstnaných na aktivním obyvatelstvu postupně během let klesal a v roce 2015 dosáhl na 4%, což je v podstatě hodnota před krizovým obdobím roku 2007 (2007; 3,8%).

V roce 2010 se na špici v míře dlouhodobé nezaměstnanosti drželo Slovensko (9,3%), Litva (8,8%) a Estonsko (7,6%). V roce 2015 se hodnoty dostaly nad 10%. Ekonomický vývoj Řecka (zadlužení, výdajové škrty, zvýšení daní atd.) měly neblahý dopad na vývoj nezaměstnanosti a řecká míra dlouhodobé nezaměstnanosti dosáhla hranice 18,2%. Dalším regionem EU s vysokou dlouhodobou nezaměstnaností bylo Chorvatsko (10,2%) a Španělsko (11,4%). Nejnižší míru dlouhodobé nezaměstnanosti od roku 2010 – 2015 zaznamenalo významně spolupracující Norsko (interval 0,6 - 1%). V roce 2010 se poměrně nízká míra dlouhodobé nezaměstnanosti dařila udržet v Rakousku a Nizozemí na 1,2 procentech. Oba regiony zaznamenaly do roku 2015 nárůst a na druhé a třetí příčce se umístilo Švédsko (o 1,3%) a Velká Británie (1,3%), viz obrázek 1. Oproti roku 2010 se medián snížil o 0,2 procentních bodů. Nad mediánem (3,1%) je dalších 11 regionů

Figure 1: Dlouhodobá nezaměstnanost v zemích EU28 letech 2010 a 2015 (v %)



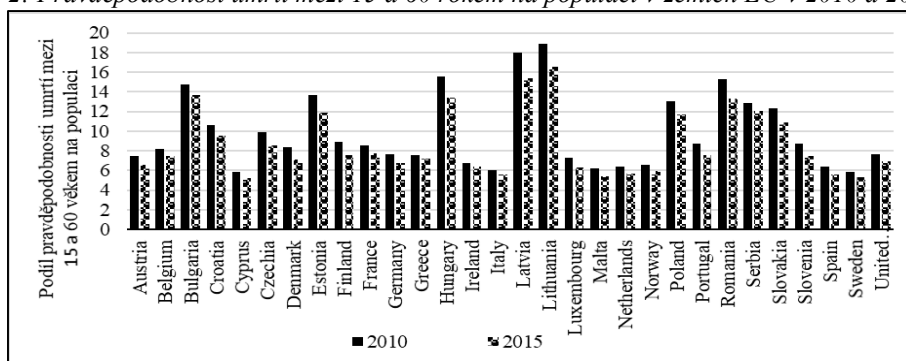
Source: EUROSTAT, Vlastní zpracování

Meziročně si polepšily především regiony bývalých sovětských republik Estonsko (o 8,4%), Litva (o 48,9%) a Lotyšsko (o 47,3%), ale i Slovensko o 18,3% (o 3 příčky). Naopak k razantnímu nárůstu podílu dlouhodobě nezaměstnaných k aktivnímu obyvatelstvu došlo na Kypru (nárůst o 423%), zmiňovaném Řecku (o 219,30%) a Nizozemí (o 150%), v absolutní hodnotě o 2,8%, viz obrázek 4.

## 2.2 Pravděpodobnost úmrtí mezi 15 a 60 věkem

Podle obrázku 2 se nízký podíl pravděpodobnosti úmrtí mezi 15 a 60 rokem života na celkovém počtu obyvatelstva v regionech Evropy projevoval v roce 2010 ve Švédsku (5,8%), Kypru (5,9%) a v Itálii (6%). Naopak vysoký podíl pravděpodobnosti úmrtí mezi 15 a 60 věkem života v pobaltských republikách se projevil v Litvě (18%) a Lotyšsku (18,8%) a také Maďarsku (15,6%). Vývoj nejnižších a nejvyšších hodnot podílu pravděpodobnosti úmrtí mezi 15 a 60 rokem na obyvatelstvu v roce 2015 kopíroval vývoj z roku 2010. Medián 8,5% z roku 2010 klesl v roce 2015 na úroveň 7,4% tj. o 1,1%. V obou sledovaných obdobích se nacházelo 16 zemí pod hranici mediánu.

Figure 2: Pravděpodobnost úmrtí mezi 15 a 60 rokem na populaci v zemích EU v 2010 a 2015 (v%)



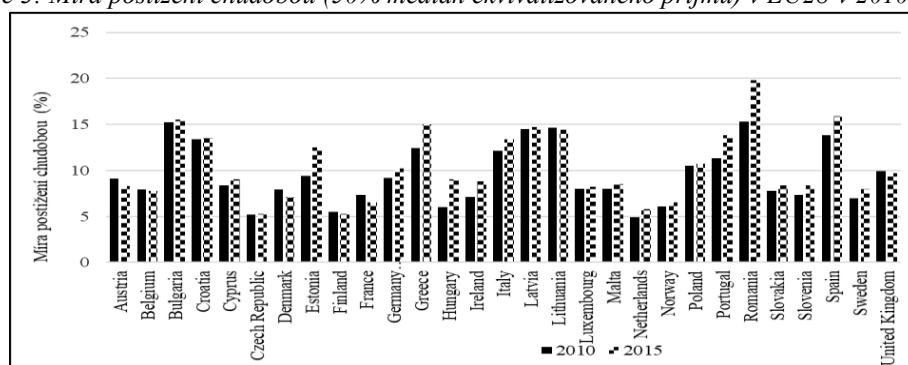
Source: WHO, Vlastní zpracování

Meziročně 2015/2010 se u všech zemí EU hodnoty ukazatele snížily (viz obrázek 4). Co se týká dynamiky vývoje, značné zlepšení podílu pravděpodobnosti úmrtí se projevilo v Dánsku (o -15,2%) a Finsku (o -14,7%), ale i Litvě (o -14,6%) a Slovinsku (o -14,4%). Země jako je Itálie (o -6,6%), Srbsko (o -6%) a Řecko (o -5,5%) se nacházely hluboko pod mediánem poklesů (medián = -11,2%). Celkově se 16 regionů pohybuje nad mediánem (střední hodnota), což svědčí o skutečnosti, že více než 50% regionů EU má lepší hodnoty podílu pravděpodobnosti úmrtí v rozmezí 15 - 60 let.

## 2.3 Riziko ohrožení chudobou

Co se týká relativní hodnoty chudoby, nejvíce postiženými regiony v rámci EU28 a Norska v roce 2010 bylo Bulharsko (15,2%), Rumunsko (15,3%). Oběma zemím se nepodařilo nastartovat pokles a míra postižení chudobou nadále rostla. V roce 2015 zůstává v popředí Rumunsko (19,8%) a Španělsko (15,9%). Mezi regiony s nejnižší mírou ohrožení chudobou se v roce 2010 řadily země jako je Nizozemí (4,9%), Česká republika (5,2%) a Finsko (5,5%). V roce 2015 se Nizozemí propadá na čtvrtou příčku a nahrazuje ji Finsko, které bylo v roce 2010 právě na onom třetím místě. (viz obrázek 3).

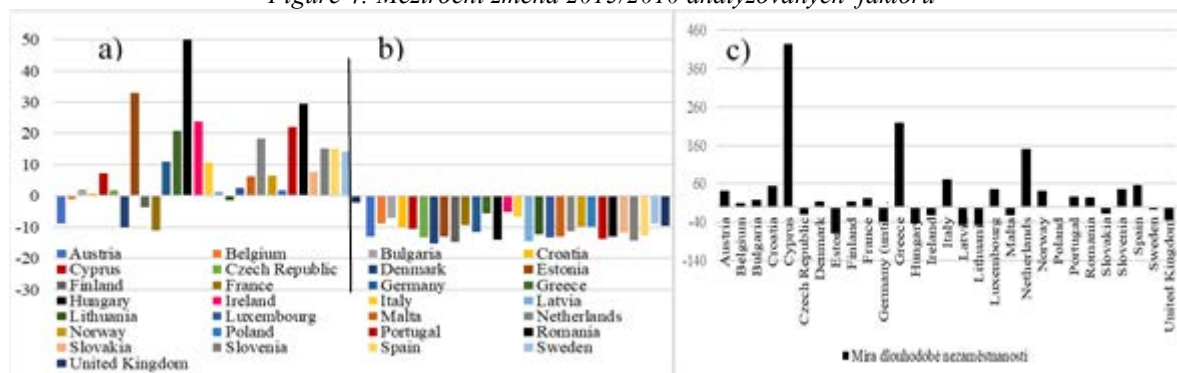
Figure 3: Míra postižení chudobou (50% medián ekvivalizovaného příjmu) v EU28 v 2010 a 2015



Source: EUROSTAT, Vlastní zpracování

Meziroční poklesy postižených chudobou (2015/2010) se projeví ve Francii (o 11%) a Dánsku (o 10,1%). Značné nárůsty míry ohrožení chudobou byly mezi roky 2010 a 2015 v Maďarsku (50%), Rumunsku (29%) a Estonsku (33%), (viz obrázek 6). Patnáct států bylo pod mediánem (106,25%), z toho pouze u 8 došlo k poklesu hodnot (viz obrázek 4)

Figure 4: Meziroční změna 2015/2010 analyzovaných faktorů



Source: Eurostat, WHO, Vlastní zpracování, a) ohrožení chudobou, b) podíl pravděpodobnosti umrtí mezi 15 a 60 věkem, c) míra dlouhodobé nezaměstnanosti

## 3. Shlukování podle vývoje vybraných agregátů HPI

Regiony byly následně zařazeny podle souhrnného hodnocení ukazatele HPI-2 2010 - 2015 do 4 skupin, tak aby korespondovaly s metodikou Kahouna a Kadeřábkové (2007). Na základě výsledků dynamiky meziročního vývoje roku 2010 a 2015 a vývoje ukazatelů roku 2015 došlo k zařazení regionů do jednotlivých skupin takto: (Tab. 1).

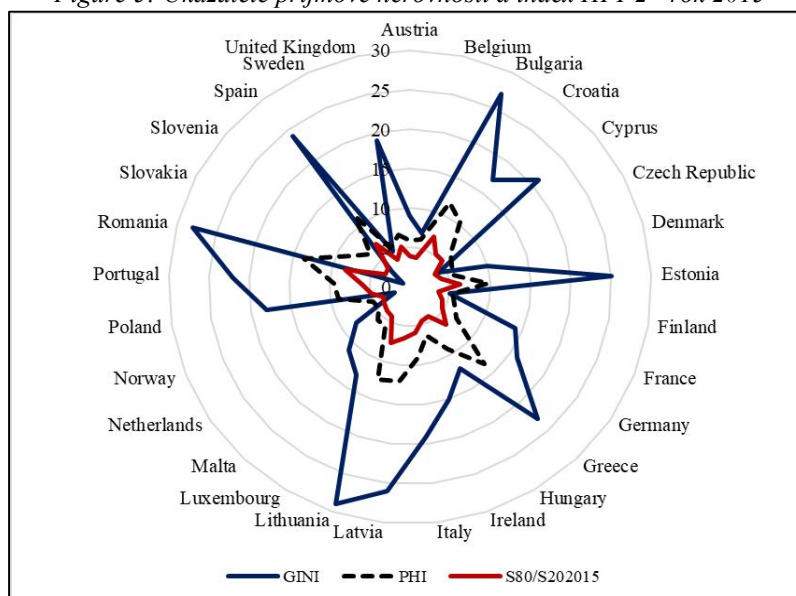
Table 1: Zařazení regionů EU a Norska podle HPI-2 a podle metodiky CEV

Kvadranty	Podle metodiky CEV		Podle HPI* 2015** a 2010
Pokračování propadu IV. kvadrant	Řecko, Španělsko, Bulharsko, Chorvatsko, Rumunsko, Portugalsko, Itálie, Slovinsko	Výrazně zatížené	Bulharsko, Řecko, Litva, Lotyšsko, Rumunsko Bulharsko, Litva, Lotyšsko, Rumunsko
Dohánění III. kvadrant	Litva, Lotyšsko, Estonsko, Maďarsko, Finsko, Polsko, Slovensko	Zatížené	Chorvatsko, Estonsko, Maďarsko, Portugalsko, Španělsko Chorvatsko, Estonsko, Maďarsko, Španělsko, Polsko, Slovensko
Ztrácející náskok II. kvadrant	Švédsko, Kypr, Irsko, Nizozemí, Norsko	Mírně zatížené	Německo, Itálie, Polsko, Slovensko Řecko, Itálie, Portugalsko, Velká Británie
Zvyšující náskok I. kvadrant	Rakousko, Belgie, Česko, Dánsko, Francie, Německo, Lucembursko, Malta, Velká Británie	Nezatížené	Rakousko, Belgie, Kypr, Česko, Dánsko, Finsko, Francie, Irsko, Lucembursko, Malta, Nizozemí, Slovinsko, Norsko, Švédsko, Velká Británie Rakousko, Belgie, Kypr, Česko, Dánsko, Finsko, Francie, Německo, Irsko, Lucembursko, Malta, Nizozemí, Norsko, Slovinsko, Švédsko

Source: Vlastní zpracování, data Eurostat, WHO. \*P4 = 1, \*\*HPI-2 rok 2015 je zobrazen v šedém pásmu.

Nejpostiženějšími regiony podle HPI-2 byly v 2015 Rumunsko a Řecko, pozitivní situace je v Nizozemí a Norsku. U všech zemí s vývojem „propadu“ došlo k nárůstu obou veličin (dlouhodobé nezaměstnanosti, ale i chudoby). Regiony ve fázi „ztracení náskoku“, jako je Norsko, Kypr a Nizozemí by se měly zaměřit především na dlouhodobou nezaměstnanost, ostatní regiony v tomto sektoru na oblast rizika ohrožení chudobou. Regiony „zvyšující náskok“ jsou regiony s poměrně nízkou mírou dlouhodobé nezaměstnanosti. Německo by mělo svou pozornost upřít na růst chudoby (viz dále), Francie a Dánsko na eliminaci růstu dlouhodobé nezaměstnanosti.

Figure 5: Ukazatele příjmové nerovnosti a index HPI-2 - rok 2015



Source: EUROSTAT, Vlastní zpracování



Za vyššími hodnotami rizika ohrožení chudobou stojí především příjmová nerovnost Bulharska, Řecka atd. Obecně lze konstatovat, že v zemích s vysokým HPI-2 se projevuje příjmová nerovnost ( $GINI \rightarrow 37 - 37,9$ ), kdy 20% nejbohatších vydělává v průměru 6krát více než 20% nejméně příjmových ( $S80/S20$ , růstový trend od roku 2010, viz obrázek 5). U zemí s nižšími hodnotami HPI-2 jsou hodnoty GINI koeficientu v intervalu 23,7 – 25 a hodnota  $S80/S20$  dosahuje maximálně hodnoty 4,3, což vypovídá, spíše o rovnostářském rozdělení příjmů.

Sumarizací výsledků lze vypožorovat následující změny: v případě Velké Británie došlo vlivem pozitivního vývoje oproti roku 2010 k vylepšení postavení mezi regiony EU, především stál pokles dlouhodobé nezaměstnanosti a snižování příjmové nerovnosti. Postavení Německa ve II. kvadrantu vypovídá o postupném opouštění regionu pozice “zvyšující se náskok“, o čemž vypovídá umístění podle HPI-2. V roce 2015 se vývoj ukazatelů zpomaluje, zvyšuje se míra ohrožených chudobou, mírný nárůst GINI koeficientu vypovídá o zvyšování příjmové nerovnosti. Značný propad je vidět u Řecka, z mírně zatíženého se stal v období 5 let výrazně zatíženým chudobou. Především došlo, jak je výše uvedeno, k růstu dlouhodobé nezaměstnanosti až na hranici 18,2% a k nárůstu míry ohrožení chudobou. Polsko a Slovensko, kde došlo ke snížení příjmové nerovnosti a především ke snížení dlouhodobé nezaměstnanosti, se během let 2010 -2015 transformovaly ze skupiny zatížených do skupiny mírně zatížené, o čemž vypovídá i vývoj dobíhání úspěšných regionů.

#### 4. Conclusion

Analýza naznačuje, že existují potíže plnění cíle stanoveného ve strategii Evropa 2020, chudoba, na místo snižování naopak v některých regionech dochází k růstovému vývoji relativní chudoby a to i přesto, že predikce po období krize s nástupem ožívání ekonomiky (po 2010) počítaly s poklesem chudoby (Michálek a Veselovská, 2012). V zemích, kde je velmi vysoká míra dlouhodobé nezaměstnanosti, lze konstatovat souvislost s vyšší mírou ohrožení chudobou (korelace = 0,6 vlastní výpočet, dále Veselovský, et al, 2016). Podle Nadace World Literacy Foundation (Deník, 2015) vydělávají lidé neschopní číst nebo psát o 42 procent méně, než by mohli. Především je potřeba v zemích s vysokým indexem chudoby HPI odstranit příjmové nerovnosti ( $S80/S20$  a GINI koeficient) a příjmou opatření eliminující dlouhodobou nezaměstnanost.

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## LOOKING BEYOND THE BREXIT IN AVIATION

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**Abstract.** A recent positive example of globalization, which has worked well for aviation, is the EU-US Open Skies Agreement. It allows any airlines (on either side EU or the US) to fly between any points in the EU and in the US. Therefore, airlines are able to use narrow-body twin-engine aircraft and this cuts their overall operating costs. On top of that, they have started to operate services from smaller uncongested airports. This makes operations more efficient and economically viable. Some sources have even been predicting radical changes in airfares, such as very low air fares on long hauls. However, this paper deals with what happens if globalization cracks and what are the consequences of hard Brexit for UK aviation. It will also address the acute issue of Brexit, given existing agreements between companies that fly between the UK and the EU as well as between mainland European countries. These will need to be renegotiated before the UK formally exits the EU. The paper also reveals what could happen to airlines that are based in the UK and have only a UK air operator certificate. Another issue is the future role of the UK aviation representatives in the European Aviation Safety Authority (EASA).

**Keywords:** transportation economics, aviation, market access, safety, cooperation, Brexit

**JEL Classification:** R49

### 1. Introduction

Globally, economy operates on periods of survival, adaptation, recovery, and innovation. (Wensveen & Leick, 2009) The aviation business especially, shows high sensitivity to economic cycles and is prone to currency fluctuations. It also represents uncertain business climate. However, there seems to be a latent stability when it comes to the sinusoidal aspect of the economy - proven by the 9/11 attacks, Britain's exit of the European Exchange Mechanism (ERM), the global financial crisis or the Icelandic ash cloud. A decreasing demand in flying is one of the first signs of an economic regression, pointing at customer hesitation and delayed spending. The United Kingdom is the EU's biggest airline market with its share of 28% in the passenger air travel market and home to some of the biggest airlines. It accounts about 200 million passengers a year in the whole country. (IATA, 2016) There are main airport hubs that serve as transfer points for trans-Atlantic travel; Heathrow by itself takes 40% of the EU-US connections. Furthermore, London airports connect the city with the rest of the world for tourist travel and business - naturally, a lot of uncertainty has been created when the EU referendum results were announced.

## 2. Methods

This paper deals with the possible impacts of Brexit on the British aviation sector and the global consequences. Special attention is paid to the relationship between the EU and the UK, to the Open Skies agreement, and to the British CAA's present/future role. A descriptive method has been used in this article in combination with hypothetical outcomes. Scientific journal articles, newspapers, and industry reports served to support the theoretical knowledge.

## 3. Brexit timeline

23 June 2016	The referendum on Brexit was held where the majority of 51.9% of the UK electorate voted to leave the European Union. (Walker, 2017)
13th July 2016	Prime Minister David Cameron resigns from his office. Theresa May takes upon the Prime Minister's role.
2nd October 2016	The Great Repeal Bill (known as Withdrawal Bill) is announced by the Prime Minister. It passed its second reading in the Parliament on September, 11 2017
29th March 2017	Prime Minister formally triggered Article 50 and has begun with the official two-year period of leaving preparations.
8th June 2017	Early General Election was held where the Conservatives secured a majority of 42.4% votes in a Hung Parliament. Labour Party received 40.0% of the electorate votes. (BBC News, June 2017)

## 4. Economic impacts

During the 1990s, three phases were used to deregulate the European airline industry. By 1997, airlines that belonged to the EU member states were allowed to fly freely within the boundaries of the Single market (Kappes & Merkert, 2013) and enjoyed extended freedom rights. Also, increasing the number of the EU member states to 28 increased the market but also widened the competition on many routes. (Kappes & Merkert, 2013) During the periods of turmoil, lot of stress was put on the aviation industry and together with liberalization; it created an easy market access for the low-cost models. On the day after the EU referendum vote, the British pound fell to a 31-year old low against the US dollar by losing 10% of its exchange rate value. Immediately affected on the stock market were banks, properties, and airlines. Later in 2016, easyJet's shares were down to 34% of the pre-referendum value and similarly, British Airways' owner IAG fell down to 23 % due to; market uncertainty, factors outside the airline's control (terror threats, strikes, weather, airport congestion) and higher fuel prices, due to weakening sterling against the dollar. (Macadam, 2016) EasyJet took 49% of the UK-EU27 air capacity (ASK) in 2016 (IATA, 2016) and has been affected by the Brexit results at the most. The passenger market is expected to decrease by 3-5% by 2020, which means an estimated reduction in air passenger growth by 1-1,5% every year. (IATA, 2016) In comparison with previous economic shocks, such as the decision to exit the ERM (European Exchange Rate Mechanism), where there was an 11-month GDP recovery required, the post-Brexit recovery is expected to be longer and shallower. In spite of a popular belief that people are travelling more because there is increasing number of people living, working and studying abroad, evidence

from the National Travel Survey for England (NTS) shows a relatively stable situation in terms of the amount of international air journeys taken. (Graham & Metz, 2017) This could be due to many factors, such as limitations on airspace and airport availability; especially Heathrow which has been operating at 99% of its capacity. A positive factor is, that despite the threats, the same amount of people choose to travel by air. However, weakening currency exchange rate might lend them to reconsider their travel plans and take more domestic trips.

## **5. Agreements and the regulatory impact on the market access**

Since the announcement of the EU referendum outcome, many approaches to Brexit have been discussed. When the new Prime Minister Theresa May declared that “Brexit means Brexit”, she aimed to emphasize that the decision to leave the EU has been dominating across the electorate meaning that Britain will focus on the “hard” Brexit. The perception of a “hard” Brexit had to be eventually altered towards a “softer” alternative, after the early General Election when the Conservatives received only 42.4% of votes ahead of the Labour Party (40.0% votes). Whether a “hard” or “soft” Brexit will take place, final agreements will depend upon the negotiation results. However, regulatory issues have arisen in connection to the UK-EU dependency and their common legal framework. Bilateral deals made by the EU give UK airlines access to other markets, just as the Open Skies agreement does. Similar agreements have been signed with other countries in the world, such as Canada, Australia, New Zealand, Brazil, and potentially there are more to come with Turkey, the Gulf States and the ASEAN Organization. (Stamp, 2016) Most of the agreements are based on liberalization of aviation between the EU and the rest of the world, opening up markets and promoting fair competition. Providing that liberalization decreases prices and increases passenger volumes, there will still be national political and economic priorities existing, that will influence negotiations. These are often carried out in the wider context of complicated international agreements. (Christidis, 2016) Within the EU, the airlines can now enjoy the “sixth freedom” of the Chicago Convention and operate between any two member countries via their home country and even operate domestic flights within another EU member country. This relates to the “seventh freedom” (Alderighi et al., 2012). For treaties only signed by the EU, it will be sufficient to notify third parties that from the UK’s exit day onwards there will be 27 instead of 28 member states to which any treaty applies. More problematic are those areas where the EU does not have exclusive rights and therefore mixed agreements were concluded. However, territorial clauses confirming the applicability of the agreements to the EU member states are included in most of them. (Henoekl, 2017)

### **5.1 European Aviation Safety Agency (EASA)**

The European Aviation Safety Agency took over the Joint Aviation Authorities (JAA) and regulates EU civil aviation market. It can be described as the “birth child” of the British and French Civil Aviation Authorities. It is estimated that these two authorities have established the majority of EASA’s regulatory framework. The UK has a strong voice and a dominant position in the EASA. However, according to the Article 1 of the Rules of Procedure of the Management Board of EASA: “...the term “member” or “members” means a representative of a Member State of the European Union and a representative of the European Commission, being “member with voting right” as well as a representative from Liechtenstein, Iceland, Norway and Switzerland, being “member without voting right”. (EASA, 2011) Upon leaving the EU, Britain will have to agree on becoming a “non-voting member” unless other EASA members fully and unanimously agree on UK voting rights. (Deloitte, 2016)

## 5.2 European Common Aviation Area (ECAA)

Losing ECAA membership status would mean the inability of the UK registered airlines to fly inter-EU routes and disable EU registered airlines to fly domestic UK routes. There would be need to negotiate the fifth, sixth, seventh, eighth and ninth freedom rights. A renewed membership within the ECAA would be the most straightforward solution for the UK. The ECAA has been created in order to liberalize the European aviation market and guarantees free market access. The biggest hurdle might yet be the condition of free movement within the ECAA that Britain would like to see being regulated.

## 5.3 Open Skies and liberalisation of the aviation market

Previously, the US had the right to refuse the designation of a European airline not operating from its own country. (Humphreys & Morrell, 2009) The Open Skies agreement is a comprehensive agreement that has completely changed the trans-Atlantic travel. Under the Open Skies, the airlines have the possibility of cooperation on capacity, scheduling and pricing under anti-trust immunity rules. (Stamp, 2016) This agreement can also work as an instrument of foreign policy.

Two key features of the Open Skies agreement focus on:

- Removal of restrictions on route rights - any EU airline is allowed to fly from any EU city to any US city. Conversely, any US airline can fly into any EU airport and from there onto third destinations. In addition, EU airlines can fly between the US and non-EU countries that are members of the ECAA. The unequal treatment of cabotage is seen as an issue; although US airlines can fly onwards in Europe, EU airlines cannot fly domestically in the US. (Pitfield, D.E., 2009)
- Foreign ownership - US companies can now only own 49% of the voting rights in European airlines, whereas European airlines can still hold only 25% in US airlines, although they can own more in non-voting shares. (Pitfield, D.E., 2009)

The agreement looks specifically at further liberalization of traffic rights, additional foreign investment opportunities, the effect on environmental measures and infrastructure, constraints on traffic rights and further access to government-financed air transport, as well as the provision of aircraft with crew. (Humphreys & Morrell, 2009) Despite the obstacles, such as state protectionism (Lykotrafiti, 2015) that can hinder liberal ambitions, Open Skies enabled opening-up of the market and an increase of destinations/flight frequencies between destinations on either side of the Atlantic. In case of a hard Brexit, the Open Skies agreement will have to be revisited as it represents one of the pan-EU agreements. This could be detrimental to London Heathrow which handles 40% of all transatlantic flights. (Pitfield, 2009) Disadvantages can also be seen in a whole chain of logistic companies if Brexit leads to the exclusion of the Open Skies Agreement, and that UK airlines will lose the opportunity to offer air transportation services within EU member states. (Tielmann & Schiereck, 2017)

## 5.4 “Umbrella” agreements

These are a series of bilateral agreements, similar to the Swiss model (as outlined in chapter 5.2) and they might be another option. But the UK could also negotiate agreements with individual EU states - statistically, 39% of Ireland’s incoming passengers are flying from the UK and 20% from the UK to Spain. (Stamp, 2016) European airlines flying outside Europe are also subject to the 50 pan-EU aviation agreements (including the Open Skies agreement) which the UK would have to update or renegotiate in case of complete withdrawal from EU laws.

## **6. Possible models**

### **6.1 Norwegian model**

Norwegian model would require continued membership within the EEA (European Economic Area). For European countries outside the EU, EEA represents a way into the Single market. EEA members are also part of the European Single Market that guarantees free movement of goods, services, people, and capital. Integration requires adopting some EU rules on employment legislation, consumer protection, environmental and competition policy. However, participation in monetary union, a common foreign and security policy and justice and home affairs policies is excluded. Membership of the EEA requires giving a membership fee to certain EU's development programmes in which they wish to participate. The rules of the EEA are set by the EU and countries outside the EU have got no decision-making or voting power. The political aspect of lacking the decision-making ability might be for the UK, difficult to accept if it comes to rules that might harm the national interest. Thus, the Norwegian model is more likely not to be in consideration. (Dhingra&Sampson, 2016)

### **6.2 Swiss model**

Switzerland is neither EU nor EEA member but it has got a series of bilateral treaties in place instead of, enabling Switzerland the flexibility to participate in a selected EU policy or programme. However, it signed up for membership to the European Free Trade Association (EFTA) which is liable to certain membership fees just like EEA membership. This aspect of flexibility on the level of integration, might be appealing to the UK. In contrast to the EEA membership, there is no obligation or guarantee of market access provision.

### **6.3 WTO model**

In the case of all negotiations failing and no treaties in place, Britain will revert to the WTO principles. A simple membership gives clear regulation binding the country in its dealings with other trading partners. (Henoekl, 2017) Under WTO rules, each member must grant the same "most favoured nation" market access, including charging the same tariffs, to all other WTO members. The only exceptions to this principle are that countries can choose to enter into free trade agreements such as the EU or EFTA and can give preferential market access to developing countries. (Dhingra&Sampson, 2016) Looking into the future, connections to the fast growing parts of the world will gain in importance. The UK has to start looking further than across the Channel or across the Atlantic to find their strategic partners in the Far East, such as South East Asia, to prove its openness for business. A revision of EU-made agreements in addition to the new trading relationships with the rest of the world will thus, be necessary.

### **6.4 Real-world airline models**

A practical example of how the regulatory framework works is shown by a few airlines that operate in the UK. E.g. easyJet, the low-cost operator has, apart from the British registered Aircraft Operators Certificate (AOC), implemented a Swiss AOC for the Geneva-based subsidiary. More recently, it was given an Austrian AOC that enables the company to enjoy the privileges of the EU Single Market, regardless of any Brexit outcome. Another example is Norwegian. This low-cost airline operates four AOCs at the present. The original Norwegian-based Norwegian Air Shuttle (NAS) coupled with Norwegian Air Norway (NAN) for future purposes, the Irish Norwegian Air International (NAI) and the British Norwegian Air UK (NUK). Primarily, these certificates were obtained in order to reach more markets and

transatlantic overfly rights. There are no doubts that this combination will be convenient once Brexit negotiations are over. Having a few operators certificates for a single airline company is considered to be an expensive but necessary option that enables the airline company to reach more markets within a post-Brexit regulatory setup. On the other hand, airlines with single AOC (e.g. British Airways or Ryanair) will have to develop a precise analysis on possible Brexit scenarios, as well as plan an alternate AOC aircraft registration should there be no agreements in place after the two-year period.

## **7. UK Civil Aviation Authorities' role**

Historically, UK CAA played a dominant role within the European aviation area as a rule-maker and innovator. The British CAA is also known for its liberal approach in terms of market access. Exiting the EU and withdrawal from essential agreements could deteriorate its position and make it unable to influence global aviation standards. (Deloitte, 2016).

CAA's view on its future existence can be put into four principles (Haines, 2016):

1. Continuity in influence on the aviation sector: United Kingdom has got the second largest aerospace in the world with a turnover of £65bn a year, supplying worldwide markets and world's third best developed aviation network behind the USA and China. Furthermore, London is viewed as the world's best connected attractive destination. The aviation sector has got an influence on the British economy and is known as one of the leading countries on aviation matters. Further development and securing UK's position in the aviation sector is necessary, just as Heathrow's airport expansion.
2. Influence beyond its borders to ensure the safety and security of UK citizens: 83% of passengers travel on international flights and every second flight is operated by a non-UK airline. Continued influence on safety and security within regulatory framework (as outlined in chapter 5) is crucial.
3. A fewer barriers to competition: The UK CAA is known for its liberal approach to competition and regulation. The creation of the European Common Aviation Area and the liberalization of air carrier licensing, market access and the low-cost business model fundamentally changed the aviation industry. (Haines, 2016). These changes doubled the number of destinations, reduced fares and gave more choice to customers. Access to a variant of the Single European Skies agreement is crucial in terms of airline ownership and slot rules.
4. Benefits on principles established by the EU: In terms of customer protection, it is also important that passengers will keep on enjoying the EC261 regulation, where they are entitled to assistance and compensation in case of flight disruptions. This regulation has been controversial within airlines but it gives the individual customer/passengers protection to passengers if they choose to fly with a European airline.

## **8. Results**

The road to Brexit is long and some of the negotiations will certainly require more time than just the two-year deadline. In comparison, it took seven years to negotiate both the Open Skies agreement and the Swiss bilateral agreement. (Barham & Owen-Howes, 2017) The aim of the paper is to discuss possible "after-Brexit" scenarios for UK aviation in a global context. No deal has yet been done, but there are existing parallels that can foresee the possible outcomes, and/or rule out certain possibilities.



## 9. Conclusion

Brexit will be significant for the UK and the global aviation industry due to strong international trade links and diplomatic-political influence. Any changes within the system will influence the dynamics, and most likely slow down Britain's GDP. Airlines and tour operating companies will need to adopt a sensible approach to planning, including a thorough analysis of risks and opportunities. (Deloitte, 2016) Airlines might have to start thinking of restructuring their governance as well. Applying pro-active planning methods would probably be more efficient than reactive and uncoordinated initiatives. The immediate impact following the EU referendum has seen the drop in the value of sterling. Brexit has also affected the stock market. The weakening of the pound has attracted greater tourist numbers to the UK but has decreased domestic purchasing power and has increased the cost of foreign holidays. With the weaker pound, consumers tend to delay their spending and investment decisions. (IATA, 2016) From the regulatory point of view, the UK regulations reflect the EU law. Airlines are taking the advantages of European Single Market and the EU-US Open Skies Agreement; and Brexit has put them in uncertainty about future validity of these agreements. Britain will have to decide on its priorities, such as the four freedoms, EU law, political or economic dependency from the EU. It is very difficult since the public has not found its consensus yet and the "leave-remain" dilemma has split the country. Additionally, Britain is the first country that triggered the Article 50 and will leave the EU. Aviation plays an important role in the British economy and despite the negative prospects of Brexit, the aviation business is expected to prosper in the future. "Aviation is international by its nature and the UK has traditionally been at the forefront of what is a truly global industry...But it is also one where EU interests ought not to be fundamentally misaligned with those of the UK". (Haines, 2016)

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# THE PROSPECTS OF A FINANCIAL SYSTEM DEVELOPMENT OF THE RUSSIAN FEDERATION IN THE CONDITIONS OF GLOBALIZATION

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**Abstract.** In article key fundamental problems of a financial system development in aspect of globalization processes influence are considered. Approach to studying of a financial system on the basis of it functional segmentation is implemented. Influence of the globalized financial system on economic development, especially on such institutes and tools as the budget, the securities market, the banking system is analyzed. Process of formation and use of reserve funds is estimated, tasks of the modern concept of financial regulation in the conditions of globalization are defined. An assessment of level of globalization impacts on key segments of a national financial system is given. Now the fundamental financial resources in the financial markets which fully aren't involved are savings of households. In this regard orientations of functioning household's impact on national economy development are systematized in article. Their accumulation and further involvement in economy of regions are one of the most important directions of the regional economic system development reforming. The analysis of the population's general preferences in the field of financial behavior in the conditions of the crisis phenomena in economy is carried out in article on the basis of sociological researches. The main conclusions about problems and the prospects of a financial system development of national economy in the conditions of globalization are formulated.

**Keywords:** globalization processes; financial system, financial behaviour, economic development, population's financial literacy

**JEL Classification:** O16, P36, G21

## 1. Introduction

Globalization is characteristic feature of the modern world economy development. Economies of the certain countries become more and more globalized including the Russian economy. The Russian financial system is a part of global finance. However, today in the conditions of sanctions the Russian economy has appeared in partial isolation.

Therefore, in the conditions of external factors impact on national economy and its limited cooperation within the world financial market consideration of theoretical aspects of financial globalization influence on national economy is represented relevant.

Works of the domestic and foreign economists dealing with globalization issues became a theoretical basis of a research. It is possible to distinguish the most significant works of Prelipcean, G; Cozorici, A.N., Przybylska-Mazur, A., Ashmarina, S.I.; Zotova, A.S.; Mantulenko, V.V., Gozgor, G.; Can, M.

Studying of economic development, influence of sanctions, the main problems of development of Russia are widely stated in works of such scientists as Sysoeva, E.; Budilova, E.; Risin, I., Lenkovets, O.M.; Kirsanova, N.Y., Iwasaki, I.; Suganuma, K. Development of shadow economy is given in works of Foroughi, F.; Mirzaei, M., Akhmeduyev, A.

All provided authors to some extent in the works explained a process entity, the positive and negative sides of globalization. However, process of globalization in the conditions of the international sanctions which complicate process of the international integration is unexplored today. Therefore, it is necessary to continue researches.

Thus, the main research purpose is determination of the prospects of a financial system development of the Russian Federation in the conditions of globalization. For achievement of a purpose it is necessary to realize a number of tasks:

- identification of theoretical aspects of globalization influence on financial systems;
- assessment of globalization influence on economic development, including a financial system of Russia;
- definition of problems of a modern concept of financial regulation;
- determination of prospects of a financial system development of Russia taking into account current trends.

The practical importance of a research assumes possibilities of use the received results in creation of economic development strategy of Russia in the conditions of world globalization.

As one of approaches to financial system decomposition it is offered to use functional and substantial segmentation of a national financial system.

The entity of this approach is connected to separation of a financial system's key segments which interaction is provided with effective mechanisms of financial management.

Further more detailed structuration of the main segments is carried out taking into account that they include a difficult complex of the tools, procedures and rules in more detail directed to the solution of separate private problems of financial regulation.

## **2. Influence of globalization on economic development of Russia**

Functional segmentation of a national financial system includes the following key segments:

- public finances (the federal budget, budgets of territorial subjects of the Russian Federation, the consolidated budget, financial reserve and other funds);
- banking system (Bank of Russia, commercial banks, specialized bank institutes);
- currency system (market, regulators, norms);
- stock market (exchanges, market);
- finance of the commercial organizations of the real sector of economy;
- finance of the state corporations and private companies of small business;
- finance of health care, education, science;
- finance of insurance system;
- municipal finance;
- finance of households.

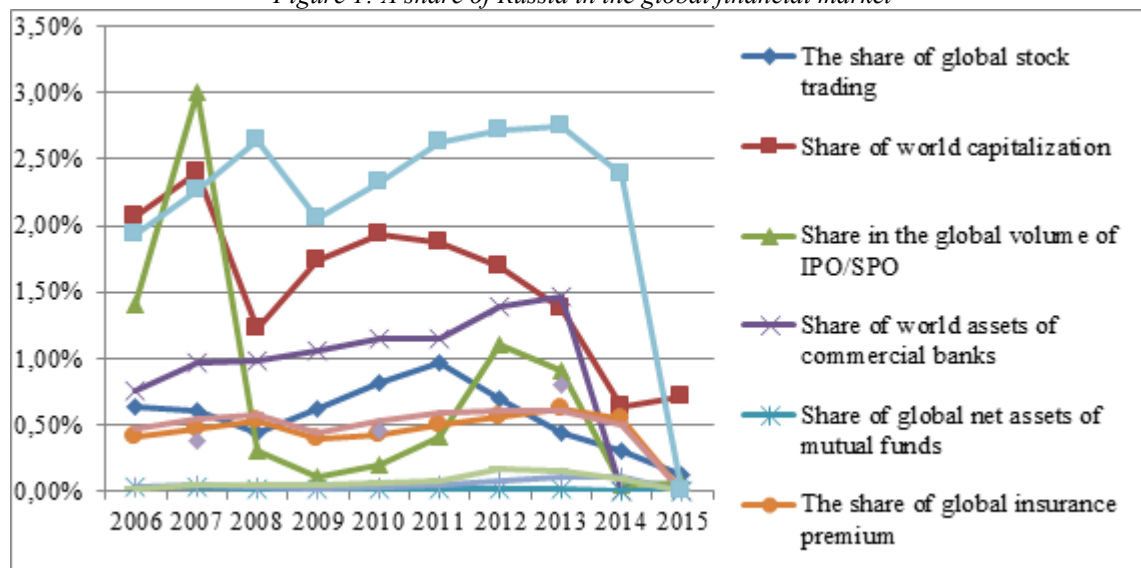
This segmentation of a financial system is complemented with institutional and functional structuring which turns on the following blocks:

- financial institutions (public financial bodies, banks, exchanges, insurance companies, etc.);
- financial instruments (budget, money, securities, certificates, letters of credit, bills, etc.);
- standard and legal, procedural financial instruments (laws, rules, norms, provisions, etc.).
- At the present stage of development, it is possible to allocate the following main problems of the modern Russian economy:
- the inefficient organization of redistribution of financial resources in real economy;
- low level of investment and innovative components of the stock market (Iwasaki & Suganuma, 2015);
- lack of purposeful activities for creation of the innovative focused market institutes;
- inaccessibility of external financial resources to business for new goods production,
- insufficiency of means for investment;
- lack of uniform methodological approach to interaction of financial institutions and real sector of economy.

All characteristics of the Russian share in the global financial market from the point of view of their dynamics during 2006 - 2015 can be subdivided into three groups (see Fig. 1):

- shares of banks (on assets) and insurance companies (on insurance premiums) tend to growth;
- indicators of the stock market share have significantly decreased (in comparison with rather high pre-crisis values - several times);
- indicators of a long-term institutional investors share (mutual funds for the cost of net assets and insurance companies for awards for life insurance) aren't significant, as well as a share of eurobonds which face value is expressed in rubles (Statistics of the external sector, 2016, Prelipcean & Cozorici, 2013).

Figure 1: A share of Russia in the global financial market



Source: Calculated according to the World Bank, the IMF, the Bank of Russia

In comparison with a share of Russia in the world economy (estimated on the basis of GDP indicator in nominal terms) all indicators of shares of the financial market sectors after crisis of 2008 are lower or significantly lower that indicates considerable underdevelopment of the Russian financial sector in comparison with the rest of the world (Shajdullina, 2016).

All indicators used in the figure 1 indicate the continuing decrease in values of these indicators for Russia. The share of Russia in world capitalization has more than twice decreased, also other indicators a share of Russia in the world market of actions, especially in the IPO/SPO market have significantly decreased. The share of Russia in the global cost of net assets of mutual funds in 2014 has decreased to very low values. In 2014 the ruble share in the world par value of the eurobonds which are in circulation has significantly decreased. P/E ratio across Russia and average P/E on emerging markets in 2014 has returned to the minimum values recorded following the results of 2008. (Ashmarina, et al.2016)

We will consider separately influence of globalization on separate segments of a financial system.

## **2.1 Banking system**

Transformation of national banking systems in the conditions of globalization forms shows the following tendencies of banking system development in the conditions of globalization: standardization of the game rules in the world banking services market; liberalization of the banking market (sector); deepening of internationalization of banking capital; emergence of the world virtual banking services market; strengthening of the bank competition; protectionism; strengthening of a role of the international organizations and transnational banks in world economy and formation of global bank infrastructure.

The analysis of a condition of a Russian banking system allows allocating the main shortcomings of her development, such as: uneven distribution of banking services about the country; insufficient development of bank infrastructure; the banking system of Russia lags behind requirement of economy. Besides, in the Russian banking system the tendency of change of institutional structure in favor of the banks which are under control of foreign owners at preservation of a high share of the banks belonging to the state is also observed. Today one of modern problems of the Russian banking system is increase in number of unprofitable banks. These negative tendencies have various natures. So, losses of banks are connected with weakness of regulation of their reserve means in the Central Bank of Russia, and the debt of natural persons — with inefficiency of work of bank management with clients.

The situation developing in connection with these tendencies significantly reduces efficiency of a banking system, her ability to provide the solution of strategic problems of economy.

## **2.2 Public finances**

The developed paradigm of the budgetary policy is characterized by strong dependence on external conditions of development. The balance of the Bank of Russia in recent years testifies to it.

The balance of the Bank of Russia in recent years testifies to it. The means placed in securities of foreign issuers by the Central Bank of Russian Federation make about 70%. The global financial crises in 1998, 2008 have shown lack of security when ruble exchange rate has gone down by 3 times, consumer prices have increased twice, and the real income of the population was reduced by 25%. Injections in economy of the huge sums have allowed to prevent a default, but at too high price. Losses from decrease in production in the industry and in other branches of economy were enormous.

## **2.3 Public debt**

The existing practice of external loans can lead to overinvestment of foreign currency. Process of leakage of the capitals which resulted in 2011 — 2013 will even more increase.

It is important to consider experience of financial crises of 1998, 2008. That is why it is necessary to conduct new policy of the stock market which would lower a speculative factor and would increase his investment orientation, and also would strengthen incentives of investment of the capital to the real sector of economy.

## **2.4 Corporate finance**

The analysis shows that transformation of the corporate finance structure is insufficiently directed to increase in efficiency of investment processes. It demands more drastic measures on regulation of the corporate sector's financial flows, their orientation to modernization on an innovative basis of fixed assets of the real sector. (Panarina, 2016)

At the same time the system of partnership of the state with corporate business structures, capable to bring corporate finance to the level answering to globalization calls has to be debugged.

## **2.5 Stock market**

Now the stock market in Russia more turns into the platform for speculative operations, instead of attraction of investments into perspective branches of economy.

By expert estimates up to 80% of the Russian stock market operations it is performed through offshore zones.

The budget from these transactions sustains multi-billion losses. In this situation possibilities of creation of the International financial center are sharply reduced. It is necessary to adjust effective control behind transactions through offshore zones.

It is important for formation of competitive global financial center of Russia not only to consolidate exchange trade and functioning of institutional infrastructure of the financial market, but also to provide network integration of the financial cluster created in Moscow with centers of rendering banking and financial services in Russian regions.

## **2.6 Finance of households**

In modern conditions more relevant is a development of Russian regions on the basis of use of population finance.

The sociological survey conducted by the All-Russian Public Opinion Research Center in 2015 has allowed to capture audience in 1600 people from 132 settlements of Russia.

Studying of the population investment preferences was a main objective of poll.

The following main results have been revealed: Russians prefer bank deposits and purchase of the real estate, then an investment in more risky, but potentially more profitable operations with securities and investments into development of own business. (Bulatova, 2017)

Sanctions have enhanced negative impact on population finance. (Przybylska-Mazur, 2016)

The problem of active use of all population savings forms as an investment resource is complicated by a number of objective circumstances now. Among them: low level of the

monetary income of households; the aspiration of citizens to store the savings in a cash form as reaction to instability of a banking system; insufficient level of financial literacy of the population; weak development of securities market and low efficiency of share tools.

On the basis of the amplifying globalization of the financial markets, crimes in the financial sector tend to increase. We will consider them: evasion of taxes, money laundering, illegal kinds of activity, including terrorism, drug trafficking, the forbidden trade in hands, modern types of slavery, corruption, etc. (Akhmeduyev, 2015)

It demands introduction reduction of all normative legal acts in the sphere of securities market, bank, insurance, estimated activity and also activity of professional participants of the financial market in compliance with the standard international legislation. (Foroughi & Mirzaei, 2017)

Observance of this requirement is directed to involvement of foreign investors and the companies that allows the listed persons to reduce significantly time and costs for adaptation and transformation of the business in new conditions, brings definiteness in their rights and duties. And the most important for national economy is reducing the shadow sector of economy.

### 3. Conclusion

The research shows that further deepening of financial globalization processes and the growing isolation of the financial markets from real economy increase risks of emergence of crisis situations in the monetary sphere. For Russia which is integrated into the world economy, risks of monetary destabilization are complicated by passive economic policy of the state.

In this regard we consider expedient accounting of the available foreign experience in the field of strategic planning. If we carry out ranging of globalization processes influence on segments of a financial system in decreasing order, then the sequence will be following: banking system, currency system, public finances, stock market and finance of households.

Now the global financial world moves towards financial dissociation in connection with introduction of the international sanctions. It considerably complicates the relations between the certain countries. (Gozgor & Can, 2017) In these conditions Russia is forced to undertake active finding solutions in response to potential sanctions. (Dreger, et al., 2016) The excessive dependence of the Russian economy on global processes of world economy, high risks and threats, her vulnerability to them represent some kind of "minefield" for possible sanctions from the USA and the EU.

In case of freezing of assets the Russian banks won't be able to return the credits, and Europeans first of all will suffer from it. (Romanova, 2016) The aspiration of the USA to punish Russia for the fact that it has disobeyed and has annexed to itself the Crimea, breaks naturally developed cooperation communications between the Russian and American companies, complicates implementation of mutual obligations. (Sysoeva, et al., 2016)

The international sanctions are an effective tool, but they are two-edged. They cause damage not only to those against whom they are applied, but also strongly strike their initiators.

The purposeful stage-by-stage movement on a way of creation of new model of financial and economic development has to be the main direction of counteraction and neutralization of the international sanctions. (Lenkovets, 2016)



Using modern methods of strategic planning, it is necessary to create the new harmonious structure of economy including modernization of energy industry, and in essence newly the built-up mechanical engineering, light industry and some other the processing branches.

The new structure of economy will open a way to creation of new structure of the commodity markets. It will allow to provide balance of supply and demand first of all in domestic market, to normalize the system of the prices and to sharply narrow the imbalance factor pressure upon growth of industrial and consumer prices.

This maneuver which can be made in 3-5 years will demand organic embedding of the financial and bank mechanism in reproduction process. At the same time financial resources, the budget, a sinking fund, the credit, keeping the specifics and certain target autonomy, will be used for realization of the general strategic plan, achievement of target indicators of development of economy and national security.

It will demand carrying out institutional transformations: creations of institute of strategic planning (in the center and in regions), institutes of long-term financing and crediting, creation of the new companies capable to carry out reindustrialization on the basis of the state private partnership, infrastructure of small business in interaction with large and medium business.

Positive shifts in structure of market economy will create opportunities to involve the system of distribution and economic incentives, to consistently solve problems of stratification of society on the poor and the rich, to put the system of "social elevators" in action, to accelerate development of education, sciences and health care.

Thus, what can be "pure" result of globalization if to consider all her advantages and shortcomings? The answer to this question to a great extent depends on the nature of world system. If the world is captured by the conflicts, then globalization will have, probably, absolutely negative consequences. To the contrary, if the world seeks for cooperation, globalization will bring only positive result. The task consists, thus, in that upon termination of Cold War and in the conditions of strengthening of globalization processes, to create such world system which would allow to take the maximum positive effect from globalization, having lowered to a minimum of her expenses. Cooperation between the countries and dynamic innovations in this area, including formation of new international institutes can become a basis of such system.

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## COMPARISON OF LABOUR PRODUCTIVITY AND AVERAGE WAGES IN A GLOBALIZED ENVIRONMENT

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**Abstract.** The topic of labour productivity and average wage comparisons is currently very much debated. On the one hand, the EU is slowly talking about wage harmonization. On the other hand, the investor realizes that for the same length of time, workers (even in the same areas) can have different labour productivity in different countries. Also, based on this, the investor can opt for the country. Of course, a combination of lower labour productivity (for example, lower by 10% compared to other country) and low average wages may be more advantageous for the investor than high labour productivity. Measuring labour productivity per hour worked provides a better picture of productivity developments in the economy. The main goal of the article is to compare the labour productivity and average wage level in selected countries of the European Union, to compare the share of the average wage on productivity and the difference in average wage level and productivity in each selected country. The first chapter provide the theoretical basis for the topic. We will explain what it is labour productivity, how we can measure it, and we will also focus on average wages. In the second chapter, we will go to research where we will compare average wages among states, labour productivity among states and consequently, we will compare labour productivity and average wages between each other. Than we will analyse the results.

**Keywords:** labour productivity, wages, average wages

**JEL Classification:** E23

### 1. Introduction

The average wage and its comparisons among countries are often an attractive topic between professional and laic public. People tend to regard the average wage as the result of the goodwill of the employer or state and deny the impact of some objective factors. Their idea is that a good employer will give people higher wages and the bad one gives them lower wages or good government pushes employers to raise wages, and evil one is dominated by greedy entrepreneurs. In modern Europe, the population of less developed economies, including Slovakia and neighbouring countries, as well as countries in southern Europe, often ask why they too can not have the same high wages as the most economical inhabitants. Most economists agree that the key to answering is just an analysis of labour productivity. (Wagner, 2002; Jayachandran, 2006) Most of us see labour productivity as some form of hard work or motivation, but this is not the only and not at all a major factor influencing GDP on the working

person. The aim of this article is to compare the average wage and labour productivity in selected countries in globalized environment. The first chapter provide the theoretical basis for the topic. We will explain what it is labour productivity, how we can measure it, and we will also focus on average wages. In the second chapter, we will go to research where we will compare average wages among states, labour productivity among states and consequently, we will compare labour productivity and average wages between each other. Than we will analyse the results.

## 2. Labour productivity and average wages in a globalized environment

In this chapter, we will look at the theoretical starting points we need to achieve the goal of work. We will look at the productivity of labour and the average wage and the significance of their comparison.

### 2.1 Average wages

The average gross monthly wage represents the proportion of wages, excluding other personnel costs, to the average total registered number of employees in a given month. We can express it from formula:

$$MW_{ag} = \frac{W_n}{E_{tn} * M_n} \quad (1)$$

MWag - Average gross monthly wage [Eur]

Wn - nominal wage [Eur]

Etn- Average registered number of employees [pcs]

Mn - number of months in the reference period

The calculation does not take into account salaries and salaries received by persons exercising public functions, judges, apprentices, non-employed persons, women on maternity leave, persons on parental leave. In statistical practice, the average gross monthly wage is published at current prices, which means that the growth of nominal gross meadows may be linked to the increase in the total amount of money paid by employers to employees as well as to the rise in price levels. Therefore, the analysis of real average gross monthly wage, which is average wage, which value is adjusted for changes related to the change in price levels. (Dix-Carneiro, 2014; Popescu, 2016) In our comparison, we used the average annual wage indicator in purchasing power parity (USD) for year 2016. This statement takes into account differences in price levels across countries and is therefore a better indicator of living standards than the nominal wage. (Jarosova & Corejova, 2015)

### 2.2 Labour productivity

There are several ways how to measure labour productivity. Tuleja (2007) defined cumulative labour productivity as a share of GDP at constant prices and the total number of employed in the country, as expressed by the formula:

$$CLP = \frac{GDP_r}{E_{tn}} \quad (2)$$

CLP - Cumulative Labour Productivity [Eur]

GDP - GDP at real prices [Eur]

Etn - total number of employees [pcs]

By comparing the growth dynamics of aggregate productivity and the growth dynamics of real gross monthly wages, we are able to determine how the unit wage costs evolved in the economy. (Melitz & Ottaviano, 2008) This indicator is obtained by dividing the net primary labour incomes and GDP at constant prices. If the rate of real wage growth is higher in the economy than the rate of labour productivity, it will lead to unit wage costs, which will consequently reduce company competitiveness, increase the risk of wage spirals and lower employment. (Felbermayr et al., 2011) Spevacek refers to labour productivity as "the relationship between the product volume created and the volume of labour input used". Labour input can be expressed as the number of hours worked in a given period or number of persons employed in a given period. On a macroeconomic level, we usually work with the real GDP ratio at constant prices and the number of people employed in the given period, ie the aggregate productivity of work per worker expressed in a formula. (Melitz, 2003)

$$ALP_t = \frac{GDP_t}{E_{tn}} \quad (3)$$

ALPt - aggregate labor productivity per worker [Eur]

GDP - Real GDP [Eur]

Etn - total number of employees [pcs]

In international comparisons it is necessary to establish a single definition of the variables used in the numerator of formulas. The main source for us is the system of national accounts ESA 2010, which defines employment as the average annual number of employees and entrepreneurs working for a residential production unit. Among employees, we advise persons over 15 who were in paid employment or self-employment. (Buselic & Pavlisic; 2016)

For entrepreneurs, we do not distinguish between employees and employees. In the case of hours worked, the length of working time is measured per person - for employees we draw from business statistics, for entrepreneurs from qualified estimates. Due to differences, in practice, the figure calculated just for employees is not used. (Datta et al., 2005)

The product is defined in ESA 2010 as GDP at constant or current prices, and we use GDP in purchasing power parity in international comparison. In such a comparison, productivity per worker is preferred, as there are differences among countries in the number of hours worked, or the data does not exist. (Hornáček & Zelenková, 2014) There are differences in the practical measurement of productivity because the indicator is calculated and monitored according to the purpose of the analysis and influenced by the type of production. (Stofkova, et al., 2015) The differences are further given by the segment of the economy, the rate of aggregation used. (Soltes & Repkova Stofkova, 2016) We can express it in physical units for matching products or in monetary terms for multiple production. In this case, the total value of production at constant prices is worked out, at the macroeconomic level it means GDP at constant prices. Productivity can be positively influenced by various factors such as work and technology, work environment, equipment used, work organization methods, management style, investment in human capital, or the use of new technologies. (Fare et al., 1994)

In our work, we use the annual aggregate productivity of work per employee as a labour productivity indicator in the parity of the US dollar purchasing power in 2016. Applying the conversion to purchasing power parity also takes into account the country's standard of living, giving a clearer view of productivity gains and developments. (Lazear, 2000; Popescu et al., 2016)

### 3. Comparison of labour productivity and average wages

We have chosen to make a comparison only in the countries of the European Union, dividing them into three groups. The first group will consist of countries that are designated as core European Union, namely Germany, France and the Netherlands.

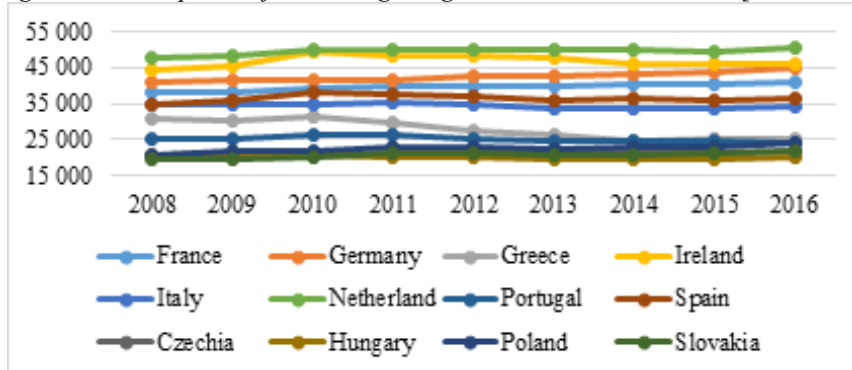
The second group includes countries PIIGS. The term PIIGS was first used for European Union countries experiencing economic problems. It was originally Portugal, Italy, Greece and Spain. In 2008, Ireland was added to it, which, after years of economic growth, struck the financial crisis and plunged Irish banks and the whole economy into high debt. The common feature of these states is a high risk that they will not be able to repay their state debt and the great damage suffered as a result of the financial crisis. The last group consists of Visegrad countries Slovakia, Czechia, Poland and Hungary. (Pernica, 2017)

#### 3.1 Evolution of the average wage

In this subchapter we compare the average wage development of the countries under review. From Fig. 1 we can see a lot. The best of PIIGS is Ireland, which was the third highest average wage in all of the countries surveyed in the last monitored year 2016. Other countries PIGS - Spain, Italy, Greece and Portugal ranked in the last four places. (Hannan, et al., 2002; Egger & Egger, 2006)

A common sign of the average wage development of all five countries was a marked declining trend since 2009, which corresponded to the decline in GDP and labour productivity in the previous year. France, Germany and the Netherlands showed rising wage developments.

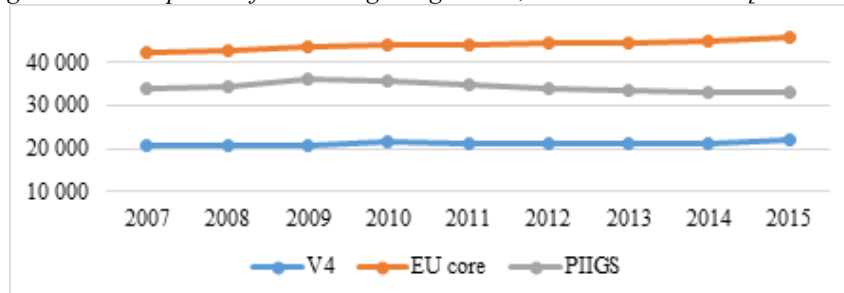
Figure 1: Development of the average wage in selected EU countries [2016 USD]



Source: OECD Statistics

For the sake of clarity, we also offer a graph where countries are in groups, as mentioned above. The data represents the average value of countries in the group.

Figure 2: Development of the average wage in V4, EU core and PIIGS [2016 USD]



Source: OECD Statistics

As we can see, the highest growth rates are in the EU core countries, followed by V4 and PIIGS.

### 3.2 Evolution of labour productivity

Consequently, in the form of a table and graph, we compared the cumulative productivity of work for an employed person in selected EU countries. Ireland recorded the highest growth in the period under review, which despite a moderate decline between 2007-2008, despite the crisis, had a high growth rate; in aggregate, their economic productivity increased by 31% in 2016. This was mainly due to a massive inflow of capital from foreign companies that began to flow into the country after the worst crisis period after 2013. (Zadnanova, 2016) Productivity has grown significantly in Spain and Portugal, where labor market reforms (OECD, 2017) took place after 2011. On the contrary, we see a markedly decreasing trend in Greece between 2008-2012. The Greek economy was most affected by the crisis due to its weak competitiveness, rising unemployment and extremely high indebtedness. It has only slowly picked up the trend since 2012, thanks to the austerity measures and reforms of the new government. In other economies, labor productivity grew relatively evenly. (Paliderova & Hraskova, 2016) Between 2008 and 2009, we saw a decline in productivity in almost all countries, followed by a fall in average wages in the next year.

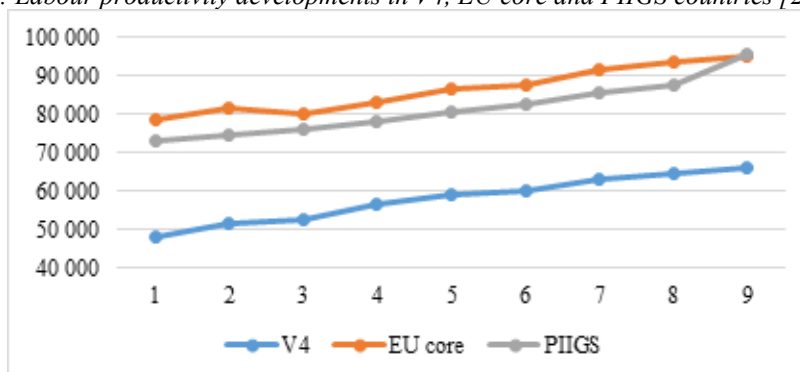
Table 1: Labor productivity developments in selected EU countries [2016 USD]

Country/Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
France	80 844	83 304	83 746	87 104	90 293	90 888	95 579	97 046	99 080
Germany	74 334	76 428	74 268	78 275	82 429	83 300	86 179	89 327	91 062
Greece	67 466	70 386	69 914	66 657	66 250	68 027	71 583	71 986	70 953
Ireland	96 002	93 332	96 072	104 687	111 159	114 709	116 411	121 987	159 798
Italy	78 511	82 158	81 912	83 955	86 878	87 122	89 477	90 647	92 334
Netherland	81 175	84 578	82 465	84 393	86 853	88 567	93 657	94 890	95 464
Portugal	53 523	55 349	56 665	59 386	59 190	60 715	65 560	66 390	67 203
Czechia	52 692	55 442	56 341	57 287	59 931	60 283	63 086	66 662	68 703
Hungary	45 354	50 212	51 385	54 082	57 104	57 389	59 977	59 701	60 386
Poland	42 209	44 375	46 552	52 197	56 269	58 621	60 806	62 118	63 843
Slovakia	52 233	56 713	56 434	62 145	63 156	65 220	68 888	70 733	71 550

Source: OECD Statistics

For the sake of clarity, we also offer a graph where countries are in groups, as mentioned above. The data represents the average value of countries in the group.

Figure 3: Labour productivity developments in V4, EU core and PIIGS countries [2016 USD]



Source: Own processing according to research

### 3.3 Comparison of labour productivity and average wage

The first indicator we analyzed was the percentage of the annual average wage on annual aggregate productivity. (Syverson, 2011) We found that the development in all groups is practically the same, but it is caused by different trends in determining the indicators. (Butek & Stofkova, 2016)

For PIGS countries, the average wage in productivity was 46.6% in 2008 and decreased to 37.7% by 2016, down by less than 9%. The decline in this figure was due to a decline in average wages over the period under review of 4.26%, while productivity increased by 18.23%. In the EU's core countries, this share was 57.3% in 2008 and decreased to 49.6% by 7.6% by the end of the reporting period. Average wages in those countries less affected by the crisis have grown by almost 4.7% in the period under review, but productivity has increased significantly by almost 21%.

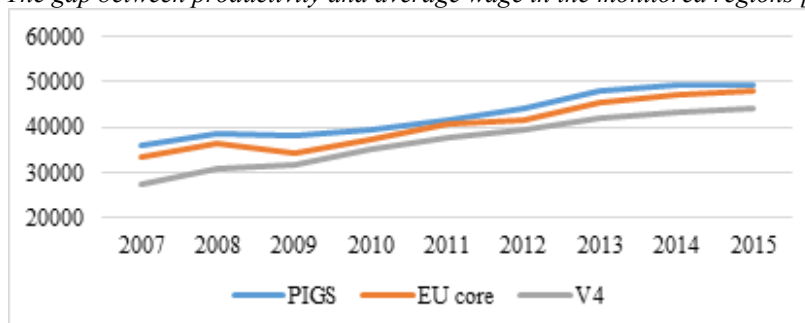
Table 2: Share of average wage on productivity in PIIGS, V4 and EU core [%]

Country/Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
PIGS	46.6%	45.0%	46.2%	45.0%	43.0%	40.5%	38.4%	37.8%	37.7%
EU core	57.3%	55.2%	57.2%	55.1%	53.0%	52.5%	50.6%	49.7%	49.6%
V4	43,0%	40,9%	39,9%	38,0%	36,2%	35,0%	33,5%	33,0%	33,3%

Source: Own processing according to research

The second indicator was the gap between labour productivity and average wage in nominal terms and its development. Overall, over the period under review, this gap grew by 42.6% in the EU's core countries, while in PIGS it was only 38%. The difference was caused by wage growth in both groups due to the economic crisis, but the EU core countries have maintained higher productivity gains than PIGS. This indicator was in 2009, driven by the year-on-year sharp decline in productivity in the EU's core countries, while wages grew. In the PIGS, productivity and wages grew slightly. By 2011, however, the EU's core countries have regained the PIGS, as they have achieved a relatively high productivity increase that has not been reflected in wage growth. In the PIGS, meanwhile, average wages declined and productivity grew only moderately. In the following year, the gap grew again as productivity gains grew at this time in PIGS and wage developments were the same in both groups. The upturn in the values of both groups again occurred in 2014, when the EU core countries managed to increase productivity more than the PIGS group in the wage stagnation in both regions under review.

Figure 4: The gap between productivity and average wage in the monitored regions [2016 USD]



Source: Own processing according to research



## 4. Conclusion

The comparison of average wage and labour productivity between countries and groups of countries has shown that PIGS and Visegrad countries still have catching up in terms of average wages and productivity levels in relation to the EU. The gap between the average wage of the PIGS group and the EU core is even higher, as in the PIGS countries, the wage level even drops against the relative wage stagnation in the EU's core. V4 countries have recorded a more positive development, but the declining yields of advanced economies, such as Germany, are still far away, as wage growth is almost similar. In terms of aggregate productivity, its growth in PIGS countries is somewhat lower than in advanced European economies. We see other developments in V4 countries, whose productivity is slowly catching up with Germany's productivity. The share of the average wage in productivity in PIGS economies is declining at the same rate as in the EU core economies, while in the V4 countries it is decreasing more dramatically compared to Germany. However, this is mainly due to the increase in productivity, so it is not a worrying phenomenon. The gap between productivity and average wage in the PIGS countries is maintained at the same nominal level as in the EU core countries, with most of the V4 countries growing faster than in Germany.

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## THE ROLE OF NATION STATE IN GLOBALIZED ECONOMY

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**Abstract.** The aim of this article is to analyze the impact of globalization on the role of the nation state. Developed economies go through a massive transformation process that fundamentally changes the possibilities of redistribution functions of national governments. The liberalization of national economies and international integration at the economic, political and legislative level is causing an increase in interconnection and interdependence. The benefits of access to the global markets are realized at the cost of reduction of national sovereignty. State as an organization providing social stability through a wide range of protectionist and redistributive mechanisms finds itself in a growing environment of corporate capital often in a subordinate position. Taxing the corporate sector by the state is inefficient and sometimes impossible. In an effort to maintain a social stability, states are competing to attract foreign investors through tax holidays and subsidies. The only benefit of such a policy is the creation of jobs for the national economy. At present, the global economy finds itself in a state of secular stagnation, where long-term government funding by government deficits is unsustainable. On the one hand, there is a group of authors who think that this is a process of extinction of sovereign states that will integrate into larger blocks. On the other hand, due to the negative effects of globalization, such as income and property polarization or growing uncertainty in the labor market, strengthening nationalist moods can be observed. Political parties claiming the strengthening of the state power are gaining popularity.

**Keywords:** nation state, globalisation, corporate sector

**JEL Classification:** F4, F34, O1

### 1. Introduction

In the Early 1980s, national economies started to become more integrated into a single global market. This process was accelerated by the end of the bipolar world at the turn of the 80s and 90s. This latest wave of globalization is different from the previous ones by few factors: (Breinek, 2005)

- New markets - foreign exchange and capital flows are globally interconnected and operate in real time 24 hours a day, growing global service markets, such as banking, insurance and transport, global consumer markets with global brands
- New tools - such as the Internet, mobile phones, media, etc.

- New actors - WTO, TNC, regional blocks such as the EU or NAFTA, G7, OECD, a network of NGOs, etc.;
- New rules and standards - expanding market-oriented policies with emphasis on deregulation and privatization.

During the last globalisation wave, there was a development and decline in transport prices. Significant progress has been made in the field of air transport and communication costs have been reduced. Thanks to integration processes, international trade of goods and services is much more integrated than in the previous period. In developed market economies, GDP is gradually shifting from the primary economic sector, mainly producing goods, to the service sector. International trade is becoming increasingly important, the value of global exports and imports exceed 50% of global GDP. (Ortiz-Ospina & Roser, 2017; Nica et al., 2016) In a single global market, there is a radical reduction in competing producers, market selection creates fewer global players. High productivity determined by economies of scale reduces the prices of goods to unprecedented levels, thereby increasing the standard of living of broad populations.

## **2. Characteristics of globalisation**

Since the beginning of 80s, the impact of globalization was due to the fast growth of the economy and world trade mainly positive. The supply and quality of goods and services have risen while production and sales prices were falling. Trade liberalization led to the internationalization of business, which stimulated economic growth and creation of new job opportunities. The internationalization of business strengthened competition on a global scale, which led to rise in the living standards. (Borowiec, 2017) Information technologies made it possible to save time and costs and led to new communication possibilities and rapid dissemination of new information and scientific progress. (Hirst & Thompson, 1995; Heller, 2008)

### **2.1 State power**

National states largely lose their autonomous decision-making power and ability to pursue their own goals. The twentieth century was characterized by the existence of powerful states and powerful state institutions capable of controlling political and economic development on its territory. (Burns & DeVillé, 2017) It is significant for the new millennium that borders between states, through increased communication, mobility, mutual trade and financial interconnection, become relative. In this situation, the state authorities also lose the possibilities and the ability to regulate social and economic relations, as this goes beyond their borders.

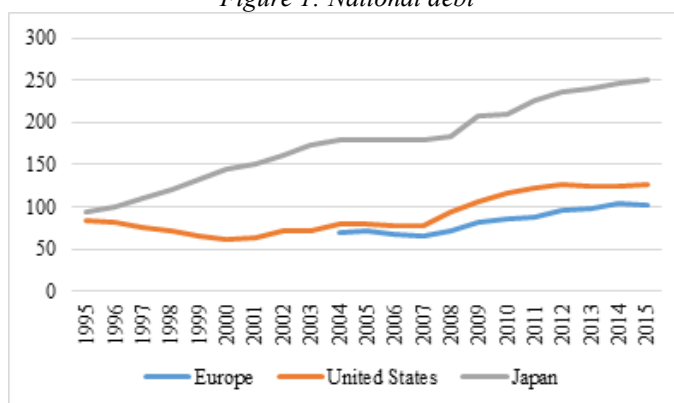
### **2.2 Development of corporate sector**

The development of multinational corporations has resulted in the issue of taxation of the corporate sector. The motive of every corporation is profit, thus it is natural that corporations have moved their production to countries with cheap labor, but profits have been realized in the countries where corporate profits were not taxed. Some estimates indicate that half of the world's money stays in tax havens or passes through. (O' Brien & R. Williams, 2004) If the nation state tries to tax corporate sector, most of the measure is ineffective because the corporation moves its production to a country with better conditions. (Heemskerk & Takes, 2016)

## 2.3 Government deficits

Social policy realisation is becoming increasingly difficult in a globalized environment due to the impossibility of taxing corporate profits. National states are in a globalized environment in the position of players rivalling each other to create the most attractive environment for corporate capital. Tax-reliefs or other stimuli to support the economy and create jobs are provided to the corporate sector by states. Automation penetrating into all sectors will in particular push low-skilled labour out of the labour market, which will create further pressure on government budgets. (Pernica, 2017) Social policy will only be feasible due to the increasing debt of national economies. The chart shows the development of the public debt of the three most economically significant entities: USA, Europe and Japan. The debt of Europe in our chart consists of the debts of the European countries that are members of the OECD.

Figure 1: National debt



Source: oecd.org

## 2.4 Nationalization vs. integration

The asymmetric distribution of the benefits of globalization processes creates social pressures that are likely to disrupt current power distribution. (Gill, 1995) Some authors call for a return to more powerful nation states. For example, according to Švihlíková (2016): "We need to strengthen national states, globalization must retreat." Such nationalist tendencies are due to the negative impact of globalization understandable, but virtually unrealistic. Despite the increasing nationalism, the globalization process is unstoppable, there is no political power that can de-globalise the world economy and return it to the control of individual nation states, because globalization is not driven by politics but by technological progress and the expansionary nature of capital. (Pehe, 2017) It is likely that the integration processes will continue. The impossibility of returning to strong national states demonstrates the situation in Greece and the UK. After the victory of the left-wing Syriza in 2015, there was virtually no change in integration processes. (Kalaitzake, 2017; Gregova & Dengova, 2014) The Greek state has, in essence, accepted creditor's demands and has adopted austerity measures as would be done by right-wing political parties. After a referendum in the UK, where residents voted for the exit from European Union, no major changes were made until now. (Menon & Salter, 2016)

Attempts to return to strong social states are in the conditions of globalization feasible only at the cost of significant decline of living standards, and therefore it is probably unrealistic.

### **3. New trends**

In relation to globalization and its possible further development, trends of regionalism and relocalization are emerging.

#### **3.1 Regionalism**

Regionalism is the process through which geographical regions become significant political and/or economic units serving as the basis for cooperation and possible identity. (Heywood, 2011; Flynn, 2016)

New regionalism involves more spontaneous process that often emerges from below and within the region itself and more in accordance with its peculiarities and problems. It is important to understand that new regionalism is a complex process of change taking place simultaneously at various levels of analysis of the global systematic levels. (Efremova, 2017; Frank et al., 2000; Mann, 1997)

Regionalism is represented by movement of two or more national economies towards greater mutual integration. The basis of this process is a state policy aimed at reducing barriers to goods, services, capital and labour. Integration then leads, globally, to the interconnection and to the growth of the cohesion of individual parts of the world economy. From a regional point of view, it contributes to creating closer links between several national economies. The result of regionalization is the emergence of regions representing territorial units with specific economic, political and cultural features. A typical example of regionalization is the emergence of the European Union. (Dengov & Tulyakova, 2015; Greblikaite et al., 2016)

#### **3.2 Relocalisation**

Some authors see relocalisation as a next evolution step after globalisation. Under the pressure of accumulated problems and rapid technological progress, there occurs the era of relocalisation, which will be linked to the increasing importance of a region – a smaller unit than a national state. Technological progress cannot be stopped, but it is possible to adapt the rules of society to the newly created conditions. (Brenner, 1999; Lerch et al., 2017)

Under the influence of the unbearable national debts and of the impact of structural changes in the economy due to automation, there may occur in some cases extinction of the national state. The processes that take place in the society are not crises processes, whose resolution will lead to a return of the society to a more or less its original state, but the processes are transformational. These processes will lead to a fundamental change in the arrangement of the society. "The coming transformation will be truly 'earth-shaking', even more than with the shift from geographic to heliocentricity many centuries ago." (Zelený, 2009) Relocalisation is therefore based on high productivity of local production (excluding unnecessary costs and reduced productivity by the burden of global logistics), based on the highly productive technologies and modern global knowledge. Without that, relocalisation cannot be attractive. Relocalisation, therefore, relates to the regions open to modern technologies and knowledge. Characteristics of such progressive regions are autonomy, independence and massive entrepreneurship. (Zelený, 2015; Zurn, 2000; Cohen, 1996; Wolf, 2001)

### **4. Conclusion**

Current developed society is undergoing strong transformation process. National state loses its power and resigns partially on delivering social stability. Despite the strengthening

nationalism, the return to a strong national state is in the context of globalisation unrealistic. There can be observed two trends, which could be next step in the society development. Regionalism is characteristic by creation of larger blocks created by two or more national states. On the other hand, there may be seen the development of regions – smaller than national state - as a more autonomous unit. The power of national state can be forwarded on one side to higher structures –for example European Union, on the other side down to smaller regions.

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## GLOBALIZATION, DEVELOPMENT AND ECONOMIC GROWTH: THE CASE OF EU MEMBER STATES

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**Abstract.** Globalization is on-going and inevitable process, directly or indirectly touching each country. It causes economic, social and political transformations. Theoreticians who examine the process of globalization split into three groups: globalists, anti-globalists and neutrals. Globalists highlight the benefits of this process, meanwhile anti-globalists emphasize the negative consequences. According to neutrals – globalization process can lead to both – positive and negative outcomes, depending on countries' globalization depth, economic development level and other factors. This study aims to determine i) whether the impact of globalization leads to the EU economic growth; ii) what impact on economic growth have separate dimensions of globalization; iii) whether this effect depends on a country's economic development level. To examine these questions, we used EU member states data over the period 1995 – 2014. To proxy globalization we utilized KOF globalization index. The research revealed that the overall level of globalization does not lead to economic growth in the EU member states. But, the hypothesis that the impact of globalization depends on countries' development level is partially confirmed. The economic integration has no statistically significant impact on relatively less developed EU countries and has positive effect in more developed countries. Social globalization has statistically significant impact on relatively less developed EU countries and has negative effect in the group of more developed ones. It was also found that considerable political engagements have negative effect on growth.

**Keywords:** globalization, globalization consequences, KOF globalization index, economic growth

**JEL Classification:** F62, F63, C12, C13

### 1. Introduction

One of the most important features of modern economic system is globalization which often refers to economic, political and social integration. The impact of globalization on economic growth is a noticeably analysed issue, emphasizing economic and trade liberalization (Chang et al. 2009; Capello & Perucca, 2015, etc.), foreign direct investment (Chakraborty & Nunnenkamp, 2008), migration (Rapoport, 2016) and knowledge accumulation (Grossman &

Helpman, 2015). The majority of studies related to the effects of globalization on economic growth highlighted its positive impact on countries' development. (Chang & Lee, 2011; Rao & Vadlamannati, 2011; Gurgul & Lach, 2014; Salifou & ul Haq, 2017)

Enlargement and integration of EU countries improve accessibility to different markets and resources. However, increasing globalization creates additional competition for local economies and creates a problem of unevenly distributed benefit across EU members and economic sectors. Thus the aim of this paper is to determine the impact of globalization on economic growth in the EU countries emphasizing the role of economic development level and separate dimensions of globalization.

The rest of the paper is organized as follows: Section 2 presents literature review on globalization impact on economic growth. Section 3 describes research variables, hypotheses and model. Section 4 presents the estimation results and summarises research findings. The last section concludes the paper.

## 2. Globalization and economic growth: theoretical background

Globalization is characterised by interaction among the countries which involves economic, technological, social and political dimensions. Researchers emphasize the impact of globalization on trade and foreign direct investment opportunities for employment, technology innovation, and international economic integration that causes higher economic growth. (Chang & Lee, 2011; Rao & Vadlamannati, 2011, etc.) Negative effect of globalization is evaluated through its impact on increasing economic and social inequality (Jin, 2006); meanwhile, several studies find no effect of globalization on economic growth. (Mah, 2010) Tab. 1 presents the results of scientific research analysis of relationship between globalization and economic growth.

Table 1: Relationship between globalization and economic growth

Variable of globalization	Researchers / years	Positive	Not Significant	Negative
FDI	Chakraborty & Nunnenkamp, 2008	X		
	Mah, 2010		X	
	Asteriou et al. 2014; Salifou & ul Hag, 2017			X
Trade/GDP	Chang et al. 2009	X		
Imports/GDP; trade/GDP	Jin (2006)			X
KOF globalization index	Rao & Vadlamannati, 2011; Chang & Lee, 2011	X		
	Lee et al. 2015			X
KOF Economic globalization subindex	Gurgul & Lach, 2014; Salifou & ul Hag, 2017	X		
	Lee et al. 2015			X
KOF Social globalization subindex	Gurgul & Lach, 2014	X		
	Lee et al. 2015			X
KOF Political globalization subindex	Gurgul & Lach, 2014; Lee et al. 2015		X	
Trade openness	Asteriou et al. 2014			X

As it can be seen, the findings of the studies are inconsistent and it is difficult to determine a clear causal relationship between globalization and economic growth. According to the analysis it can be stated that the employed methodology has some drawbacks. *First*, a country's openness is usually evaluated and based on FDI and trade flows, which are sensitive to the

economic cycle, especially in integrated economies. *Second*, some researchers emphasized that the impact of globalization is changing over different periods (Lipsey & Sjöholm, 2005) and countries. (Nicolini & Resmini, 2010) *Third*, global and European integration processes are analysed as a whole, so it is not possible to distinguish the impact that the two processes might have on each other in terms of economic benefits.

### 3. Data and the model

The sample used in the econometric analysis of this study includes the unbalanced panel data of 26 EU member states for the period 1995–2014. Sample consists of 484 observations. The definition and the data sources of each variable, as well as descriptive statistics of the variables are presented in Tab. 2.

Table 2: Definition, data sources and descriptive statistics of variables

Variable		Definition	Source	Measurement	Min	Average	Max
Dependent variable	g	GDP per capita	World bank	USD	1208.9	23591	64322
				% annual	-25.257	5.7778	45.263
Core independent variables	KOF	Globalization Index	Swiss Federal Institute of Technology Zurich	Index	47.416	79.766	92.838
	E_glob	Economic integration			30.365	78.935	97.254
	S_glob	Social globalization			36.888	77.656	92.619
	P_glob	Political engagement			29.421	83.663	98.414
Control variables	KL	Gross capital formation per employee	World bank (or calculated by authors using World bank data)	USD	169.71	11345	35142
				% annual	-72.978	5.9144	104.62
	IND	Industry, value added	% of GDP	10.720	28.369	41.515	
	SER	Services, value added	% of GDP	41.860	68.124	87.197	
	EHC	Expenditures on health care per capita	USD	53.000	2031.0	6808.0	
			% annual	-32.927	7.3267	56.944	
	EED	Expenditures on education per capita	USD	36.009	1216.1	5220.4	
			% annual	-46.831	7.0500	245.57	
	R&D	Investment in R&D per capita	USD	6.1502	446.95	2062.6	
		% annual	-41.081	8.5889	132.13		

To research the relationship between globalization and economic growth, we augment the standard Cobb-Douglas production function particularly focusing on globalization:  $Y=AF(K/L,KOF,C)$ , where  $A$  is technological progress;  $K/L$  is capital-to-labour ratio;  $KOF^1$  is the KOF index of globalization and  $C$  represents other sources of growth, such as economic structure, investment in human capital and R&D. The main difference between our augmented equation and the traditional Cobb-Douglas production function is the incorporation of globalization variable, as well as other variables that affect economic growth.

<sup>1</sup>KOF globalization index was created by Axel Dreher (Swiss Economic Institute) in 2002. KOF consists of three sub-indices: economic, social, and political. Compared to other globalization indices (Kearney Foreign Policy Index, Maastricht Globalization Index, CSGR, New Globalization Index), it includes the largest number of indicators (23). The globalization of 207 countries is evaluated every year and covers the longest period (1970 – 2014). This suggests that this index most objectively reveals the level of globalization. More information about KOF index of globalization and its composition: <http://globalization.kof.ethz.ch/>

Based on the augmented Cobb-Douglas production function explained above, our econometric equation for examining globalization impact on growth can be specified as follows:

$$GDP_{i,t} = \delta GDP_{i,t-1} + \alpha + \beta_1 KOF_{i,t} + c_k \sum_{k=1}^6 C_{i,t,k} + \varphi_t + \mu_i + \varepsilon_{i,t} \quad (1)^2$$

where the subscripts  $i$  and  $t$  represent, respectively, country and time period;  $GDP_{i,t-1}$  denotes initial per capita GDP; matrix  $C$  denotes a set of six control variables.  $\varphi_t$  and  $\mu_i$  denote, respectively, the time and country-specific effects; and  $\varepsilon_{i,t}$  is the error term. We are interested in testing whether the marginal impact of globalization on growth,  $\beta_1$ , is statistically significant.

To examine whether globalization impact on growth is conditional on globalization depth, i.e. whether relationship between globalization and grow is non-linear, we will employ econometric equation:

$$GDP_{i,t} = \delta GDP_{i,t-1} + \alpha + \beta_1 KOF_{i,t} + \beta_2 KOF_{i,t}^2 + c_k \sum_{k=1}^6 C_{i,t,k} + \varphi_t + \mu_i + \varepsilon_{i,t} \quad (2)$$

If  $\beta_1$  is positive and  $\beta_2$  is negative, both statistically significant, the impact of globalization is decreasing with higher depth of its level; meanwhile, we would have evidence of marginally increasing impact of globalization when its level is getting deeper if both  $\beta_1$  and  $\beta_2$  are positive and statistically significant. With negative coefficients  $\beta_1$  and  $\beta_2$ , both statistically significant, we would have evidence of negative growth effects of globalization that is getting bigger in magnitude with higher level of its depth. Negative coefficient on  $\beta_1$  and positive on  $\beta_2$ , both statistically significant, would imply that globalization negatively affects growth but this effect is getting smaller while level of globalization depth is getting bigger.

To examine potentially heterogeneous impact of globalization on growth, i.e. whether relationship between globalization and grow depends on countries' development level, we will use econometric equation specified as follows:

$$GDP_{i,t} = \delta GDP_{i,t-1} + \alpha + \beta_1 KOF_{i,t} + \beta_2 KOF_{i,t} \cdot DEVL_i + c_k \sum_{k=1}^6 C_{i,t,k} + \varphi_t + \mu_i + \varepsilon_{i,t} \quad (3)$$

where  $DEVL_i$  is dummy variable equal to 1 if a country's development level is relatively high.

In case when globalization in general positively correlates with growth, statistically significant and positive  $\beta_2$  would imply that positive growth effects of globalization are even bigger in relatively developed countries, meanwhile statistically significant and negative  $\beta_2$  would imply that positive growth effects of globalization are smaller in relatively developed countries compared to relatively less developed. Similarly, these effects could be compared as having negative overall effect of globalization on growth.

GMM is used for estimating the equations (1) – (3) because it enables to deal with potential endogeneity problem of right-hand side variables. According to the GMM technique, equation must be differentiated, next, lagged observations of the first difference of the independent variables are used as instruments for estimation. Taking into account time-specific effects, we obtain:

$$g = GDP_{i,t} - GDP_{i,t-1} = \delta(GDP_{i,t-1} - GDP_{i,t-2}) + \beta(X_{i,t} - X_{i,t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (4)$$

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<sup>2</sup>Note that equation (1) can be alternatively written with the growth rate as a dependent variable as:  $g = GDP_{i,t} - GDP_{i,t-1} = (\delta - 1)GDP_{i,t-1} + \alpha + \beta_1 KOF_{i,t} + c_k \sum_{k=1}^6 C_{i,t,k} + \varphi_t + \mu_i + \varepsilon_{i,t}$ , where  $(\delta - 1)$  is the convergence coefficient.

where  $X_{it}$  is now the set of explanatory variables, also including KOF, development level, and the interaction term.

GMM method is presented and discussed in detail by Arellano & Bond (1991). Alonso-Borrego & Arellano (1999) and Blundell & Bond (1998) concern regarding weak instrumental variables and suggestions by Arellano & Bover (1995) to overcome that problem by using additional moment conditions for an equation expressed in levels are also employed in the analysis. Combining equation in differences with equation in levels into one system, the estimators are called system GMM estimators (SGMM). As Hauk & Wacziarg (2009) pointed out, the SGMM estimators should be used for panel data regressions to estimate more consistent and efficient parameters.

To examine the overall validity of the SGMM estimation, following Arellano & Bond (1991) and Blundell & Bond (1998), two tests are to be carried out: (1) the Sargan test which tests the null hypothesis that the instruments are valid; and (2) the AR (2) test which tests null hypothesis that there is no second-order auto-correlation. The SGMM estimation results are valid only after passing the above two tests.

#### 4. Estimation results

Tab. 3 presents the 1-step SGMM estimations including equations in levels of the econometric equations (1) – (3). All variables are logged and all estimations include time dummies. The statistics given in the parentheses under the coefficients of explanatory variables are Z-values using robust (Windmeijer-corrected) standard errors<sup>3</sup>. The statistics in the parentheses of the AR (2)/Sagan test are p-values.

Table 3: Estimation results

	I	II	III	IV	V	VI
Y(-1)	0.4959*** (5.9835)	0.4961*** (6.0948)	0.4992*** (6.1433)	0.4956*** (6.3030)	0.5044*** (6.2578)	0.5460*** (6.7312)
Constant	3.7546*** (5.2514)	0.1585 (0.0346)	3.7142*** (6.1433)	4.1607*** (4.7169)	4.0057 (1.2643)	3.8129*** (5.2952)
KOF	0.0595 (0.5282)	1.8256 (0.8390)	0.0588 (0.5322)			
KOF <sup>2</sup>		-0.2055 (-0.8019)				
KOF*DEVL			0.0010 (0.1712)			
E_glob				0.0986 (1.6113)	-0.0251 (-0.0246)	0.0400 (0.8100)
E_glob <sup>2</sup>					0.0121 (0.0972)	
E_glob*DEVL						0.2592*** (2.6409)
S_glob				-0.0105 (-0.1312)	-1.9869 (-1.1337)	0.0377 (0.4851)
S_glob <sup>2</sup>					0.2339 (1.1253)	
S_glob*DEVL						-0.3130** (-2.1778)

<sup>3</sup>To take into account the concern of Blundell & Bond (1998) about the downward-biased tendency of standard errors estimated by the SGMM approach for small samples we used Windmeijer (2005) suggested finite-sample corrections to the asymptotic covariance matrix of the parameters, which are nowadays almost universally used.

P_glob				-0.0111 (-0.2220)	1.7757* (1.8421)	-0.0240 (-0.5681)
P_glob <sup>2</sup>					-0.2149* (-1.7905)	
P_glob*DEVL						0.0558 (0.5247)
K/L	0.1733*** (6.4420)	0.1679*** (5.8187)	0.1725*** (6.6921)	0.1707*** (6.6033)	0.1748*** (6.4783)	0.1510*** (6.7472)
Industry sector	-0.2243*** (-4.2835)	-0.2370*** (-4.6962)	-0.2208*** (-4.1932)	-0.2522*** (-3.8845)	-0.1851*** (-3.3954)	-0.2280*** (-4.1212)
Service sector	0.4593*** (3.6054)	0.4921*** (3.9447)	0.4525*** (3.4021)	0.5490*** (3.1378)	0.3962*** (2.5811)	0.4759*** (3.0643)
Expenditures on health	0.1581*** (3.5254)	0.1596*** (3.6140)	0.1561*** (3.4709)	0.1668*** (3.7046)	0.1733*** (3.4723)	0.1450*** (3.1699)
Expenditures on education	0.1455*** (4.0724)	0.1473*** (4.1585)	0.1447*** (4.0588)	0.1369*** (4.1397)	0.1276*** (4.3052)	0.1172*** (4.4685)
Expenditures on R&D	-0.0146 (-0.5088)	-0.0124 (-0.4373)	-0.0158 (-0.5878)	-0.0118 (-0.4464)	-0.0171 (-0.7028)	-0.0082 (-0.3912)
AR (2) test	-1.216 [0.224]	-1.141 [0.254]	-1.277 [0.202]	-0.930 [0.352]	-1.248 [0.212]	-1.542 [0.123]
Sargan test	210.8 [0.122]	210.3 [0.127]	214.1 [0.093]	197.1 [0.309]	208.8 [0.142]	203.5 [0.150]

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

The results in Tab. 3 show that the correlation between the current growth ( $g_{i,t}$ ) and one-year lagged growth ( $g_{i,t-1}$ ) is positive and statistically significant. This finding strongly supports the view that the relationship between economic growth and its sources should be investigated in a dynamic framework. It means that country's past economic growth should be considered as an important factor to control the potential effects of unobserved historical background on current growth rate. This is in line with Wooldridge (2010), who suggests to include a lagged dependent variable as a proxy for omitted variables to account for historical factors that affect current changes in the dependent variable. This also implies that commonly used fixed or random effects estimators that ignore the dynamic nature of the relationship between economic growth and its sources may be biased. (Blundell & Bond, 2000)

Estimation (I) that corresponds to equations (1) shows that direct link between globalization and economic growth has no statistically significant evidence. Estimation (II) shows that the globalization impact on growth resembles an inverted U-shape curve, but still with no proof of its statistical significance. Estimation (III) shows no heterogeneous growth effects of globalization. In consistence with earlier studies on economic growth, we also find that capital-to-labour ratio promotes economic growth. Bigger share of industry sector negatively affects growth, whereas expenditures on health and education, growth of service sector help to boost economic growth. We also found evidence that expenditures on R&D have no instant effect on economic growth.

Finding no significant link between globalization and growth, instead of KOF globalization index we included separate elements (Economic integration, Social globalization and Political engagement) of this index in equations (1) – (3) and estimated them (see respectively estimates (IV) – (VI) in Tab. 3). Estimation (IV) still shows no impact of Economic integration, Social globalization or Political engagement on growth. Estimation (V) that models potentially non-linear relationship, revealed some statistically significant evidence of inverted U-shape curve form relationship between Political engagement and growth, i.e. Political engagement positively correlates with growth, but after passing a turning point of about 62 this correlation

becomes negative. It seems that considerable Political engagements have negative effect on growth. Analysing impact that could be conditional on country's development level (estimation (VI)) we found that Economic integration has positive effect on growth just in group of relatively more developed countries. In case of Social globalization, it seems that this phenomenon has negative effect on growth in more developed countries while no effect in others.

## 5. Conclusion

Based on theoretical assumptions and retrospective empirical studies, it can be argued that globalization can lead to positive, negative and statistically not significant impacts on countries' development. In empirical studies globalization is often expressed in terms of trade or financial flows. However, this reflects only the economic dimension of globalization. For a comprehensive assessment, it is appropriate to use one of the globalization indexes. Most comprehensively globalization is reflected by the KOF index of globalization. It includes economic, social and political dimension of globalization. Examining the impact of globalization on the EU growth has revealed that globalization generally has no direct significant impact. Having examined the links with economic, social and political dimensions of globalization separately, it was found that considerable political engagements have negative effect on growth. Economic and social globalization effects on countries economic growth depend on a country's economic situation: i) economic integration does not have statistically significant impact on relatively less developed EU countries and has positive effect in the group of more developed countries; ii) social globalization has statistically significant impact on relatively less developed EU countries and has negative effect in the group of more developed countries.

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# THE USE OF THE LATEST TECHNOLOGIES FOR CORPORATE EDUCATION IN THE CZECH REPUBLIC WITHIN THE CONTEXT OF GLOBAL DEVELOPMENTS IN THE FIELD

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**Abstract:** In today's globalized world, the use of the latest technologies is playing an increasingly important role in education, including corporate education. This contribution compares the difference between the normative and positive state of the use of such technologies, including video conferencing, mobile media, multimedia and computer-based applications within the sphere of corporate education. The analysis is made on the basis of the results of a questionnaire survey that was conducted in the second half of 2016 among 607 companies in the Czech Republic. The normative state was determined according to the responses to the question of to what extent the latest technologies are being used, whereas the positive state is according to the responses to the question of to what extent the latest technologies should be used to make education more effective. For the purposes of recording the responses of the individual companies, a 4-point fully anchored rating scale was used. All the necessary calculations and graphs were carried out and prepared using a combination of R-software, SPSS, MS Excel, MySQL Workbench and MS PowerShell ISE. The results of the research show that most human resource departments believe that more extensive use of the latest technologies for employee training would increase the effectiveness of this training. This result is fully in line with current global trends in corporate education.

**Keywords:** global, technologies, corporate education, Czech Republic

**JEL Classification:** M53, M54, M12, J53

## 1. Introduction

The globalization and internationalization of the world is a phenomenon of the present civilization. Companies face strong global competition and they increasingly realize that they need employees that have the latest knowledge, skills and competences to be competitive. Corporate education that definitely leads to e-learning and utilizes the latest technologies plays a key role. (Milosavljevic et al. 2012) Andreatos (2011) also claims that the ability to learn is a decisive factor for a company to survive and ensure competitiveness in the globalized world, while he points out that the latest information technologies are starting to play a key role in both formal and non-formal education. Numerous further authors are inclined towards this trend. Sharma & Garg (2017) compare traditional and web based learning and state that the efforts to increase the effectiveness of corporate education lead to a situation where a virtual educational environment leaning on the latest technologies is more often used for these purposes in various spheres. To promote this type of education, they claim that virtual learning can be performed

anywhere and anytime, but they also stress that self-management, self-control, autonomous thinking and learning, and particularly the high motivation of the learner are important preconditions for this kind of education. Rosu et al. (2008) believe that electronic education is the best solution, and that employees should have access to company information sources and knowledge. Chen et al. (2008) claim that the development of electronic corporate education can positively affect the competitiveness of a company and significantly reduce the cost of education. Ananchenkova & Ponomareva (2016) point out, in an example from Russia, that distance learning technologies are more and more popular within corporate education. This kind of education rises from the efforts to increase the effectiveness of education and to reduce the costs of the education organization, to utilize rationally the time of the employees involved in the company education system and last but not least to accumulate and systemize company knowledge. For this purpose, companies use external service providers't, their own resources or a combination of both. Vasile & Teodorescu (2015) also point out, on the basis of their research, the advantages of e-learning for corporate education purposes. Apart from the economic benefits, in their opinion e-learning has further advantages like simplicity, flexibility, universal accessibility, the possibility of instant feedback and the availability of a large quantity of information amongst others. Kimiloglu et al. (2017) are also involved in research on the applications of electronic media in corporate education. These authors also came to the conclusion, based on their research, that the advantages outweigh the disadvantages in the eyes of company owners. However, they admit that companies often prefer blended learning to 100% online education. Gharibpoor et al. (2013) examined the traditional as well as e-learning methods used by small and medium sized companies in the education of their employees and compared the effectiveness of both corporate education methods; they came to the conclusion that e-learning, if applied properly, is more effective than the traditional methods of corporate education. Numerous experts support the application of new technologies for the purposes of corporate education. Sanchez-Gordon & Lujan-Mora (2016), for example, see big potential in the increase of the efficiency and finance effectiveness of corporate education in the in the use of the available massive open online courses (MOOCs) and open educational resources (OERs). They have therefore created an ecosystem for corporate training which enables accessible MOOCs and OERs deployment in a corporate training context. Their proposed system defines three stages: development, publication and improvement. Fumero et al. (2016) show one of the possible ways for further development of corporate education in the example of the iCamp, which represents an innovative, inclusive, interactive and intercultural educational network for the new generation. Further authors that deserve mentioning are Qiu et al. (2009), who analysed the educational needs of the employees of small and medium-sized companies in China. They highlight the advantages and also mention some of the disadvantages of e-learning for small and medium-sized companies. They propose a video/audio education system based on media streaming. They discuss the advantages of audio/video education, describe the structure of this system and the suitable key technologies for this form of education. Beutner & Pechuel (2012) focus on e-learning and its implementation in companies, which involves a lot of opportunities on the one hand, but also some problems on the other. The availability of mobile technological devices like smartphones and tablets leads to a situation where mobile learning, so-called m-learning, becomes an important element of modern didactics. Lin et al. (2011) also compare and analyse the educational methods in modern companies and study the effectiveness of various educational activities. They are convinced that open learning, advanced technologies, autonomy and flexibility or resource sharing are the basic factors for the success of corporate education. New technologies also play a more and more important role in the evaluation of the

learning outcomes, which document its effectiveness. Zhang (2009) for example presents an evaluation method supported by backpropagation of a neural network.

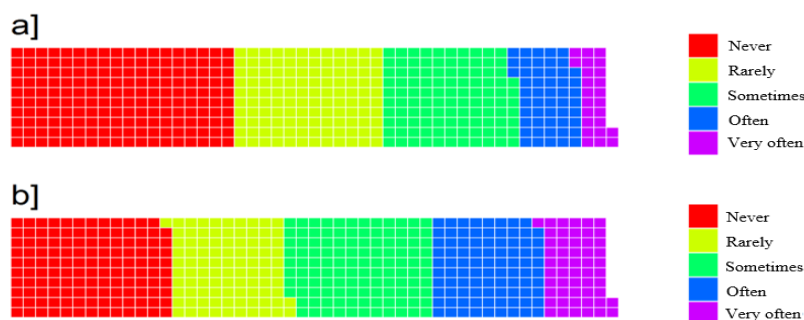
## 1.1 Methodology

Our primary aim of the research was to compare the difference between the normative and positive state of the application of as company managers perceive it. Whereas the normative (existing) state (ascertained from the opinions of the respondents) was captured through the answers to question 13: “What didactic methods and forms of education/development of employees are being used in your company at present? [the latest technologies, (e.g. video conferencing, mobile media, multimedia and computer-based applications with the use of computer networks)]”, the positive state (the one that would “appeal” to the respondents) was ascertained through question 14: “What didactic methods and forms of education/development of employees should be used in your company so that the educational system is more beneficial to the company and its employees? [the latest technologies, (e.g. video conferencing, mobile media, multimedia and computer-based applications with the use of computer networks)]” Both the questions were a part of a large research carried out among companies in the Czech Republic that was conducted in the second half of 2016 among 607 companies in the Czech Republic. With regard to the fact that the individual subjects (respondents), the representatives of companies, were only able to express themselves through a 4-point fully anchored rating scale, a non-parametric approach was applied to the statistical data evaluation in line with the recommendation; see (Siegel, 1956). Procedures suitable for the categorical type data can also be applied. All of the necessary calculations and graphs were carried out and prepared using a combination of R, SPSS, MS Excel a MySQL Workbench, MS PowerShell ISE. The results obtained from a questionnaire survey were analysed to examine the discrepancy between the real state (normative state) and the “ideal” state (positive state). 607 companies from across the CR were analysed in total. The 4-point fully anchored rating scale was used for the recording of the answers of the individual entities – their representatives – in this case. The data matrix dimension was 607 x 2. With regard to the fact that the data matrix showed a high number of missing answers (to both the questions), the incomplete observation pairs were removed. 125 companies were removed after this adjustment. This is why 482 companies, who replied to both the questions, were subject to the analysis.

## 2. Results

The relative interpretation of the distribution of opinions (a] normative state; b] positive state) to the pair of questions asked is shown below, see figure 1.

Figure 1: The relative interpretation of the distribution of the individual respondents' answers to the questions 13 normative state a] and to the question 14 b] positive state



Source: author

## 2.1 The present state of the use of the newest technologies in education for employees– the normative state

The table 1 below shows the distribution of the frequencies of the present state according to the replies of the representatives of the individual companies to question 13. It is clear from the table below that the category “never”, which was expressed by 180 (37.344 %) from 487 entities, was the most typical category. “Rarely” was the second most typical category, 120 respondents (24.89 %) from 487. On the other hand, only 24 respondents (4.979 %) expressed themselves in the category “very often”.

Table 1: Distribution of the frequencies of respondents' answers to the question 13 – normative state

Category	Absolute frequencies	Relative frequencies	Cumulative absolute frequencies	Cumulative relative frequencies
Never	180	37.344	180	37.344
Rarely	120	24.896	300	62.241
Sometimes	107	22.199	407	84.440
Often	51	10.581	458	95.021
very often	24	4.979	482	100.000

Source: author

## 2.2 Respondents' opinion on what should the use of the latest technologies in education for employees “look like” – positive state

Table 2: Distribution of the frequencies of respondents' answers to the question 14 – positive state

Category	Absolute frequencies	Relative frequencies	Cumulative absolute frequencies	Cumulative relative frequencies
Never	129	26.763	129	26.763
Sometimes	118	24.481	247	51.245
Rarely	93	19.295	340	70.539
Often	89	18.465	429	89.004
very often	53	10.996	482	100.000

Source: author

The table 2 above shows the distribution of the frequencies of the required – positive state – on the basis of the replies of the representatives of the individual companies to question 14. It is clear from the table that the category “never” is the most typical one again, as 129 (26.763 % of the total of 482 entities) expressed themselves through that. The category “sometimes”, through which 118 respondents (24.481 % of the total of 482) expressed themselves, was the second most typical one. On the other pole, there was the category “very often”, as in the case of the normative state. However, no less than 53 respondents (10.996 % of the total of 482 respondents) expressed themselves through this category. The second least frequent category was “often” (89 respondents, 18.465 %), which can be considered a significant growth in comparison to the normative state (51 respondents, 10.584 %).

It is therefore obvious from the comparison that a “need” for more intensive use of the latest technologies (e.g. video conferencing, mobile media, multimedia and computer-based applications with the use of computer networks) exists among business entities. If we dealt with the “structure of the changes of opinions” in more detail, or with the homogeneity of the marginal frequencies in these dependent variables, we would obtain the following square table for the analysis (see Tab. 3 below). This table basically presents the changes of the categories of the respondents' answers (normative vs. positive state).

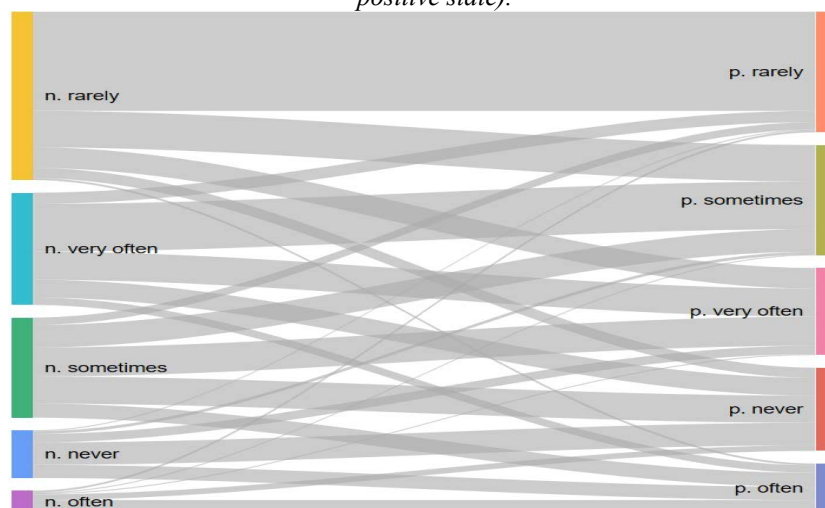
Table 3: Distribution of the answers and opinions of the individual respondents (the predominance is highlighted in bold). The line categories represent the normative state, the column categories represent the positive state.

Category	pos. never	pos. rarely	pos. sometimes	pos. often	pos. very often	Total
<b>never</b>	106	<b>22</b>	<b>39</b>	<b>11</b>	2	180
<b>rarely</b>	12	30	<b>51</b>	<b>19</b>	<b>8</b>	120
<b>sometimes</b>	8	31	24	<b>29</b>	<b>15</b>	107
<b>often</b>	1	9	3	24	<b>14</b>	51
<b>very often</b>	2	1	1	6	14	24
<b>Total</b>	129	93	118	89	53	482

Source: author

It is clear from the absolute frequencies on the main diagonal (106, 30, 23, 24, 14), that 198 respondents in total were “satisfied” with the state, which is why they “did not feel the need to change the opinion”. The numbers one position above the main diagonal (22,51,29,14) show the shift by one category towards more intensive use. There were 116 such respondents. On the other hand, the values one position below the main diagonal (12,31,3,6) show the opposite shift. There were 52 such respondents. The numbers two positions above the main diagonal (39,19,15) show the shift by two categories towards more intensive use. The situation below the main diagonal is analogical (8,9,1). The numbers three positions above the main diagonal (11,8) show the shift by three categories towards more intensive use. Analogically below the main diagonal. Finally, the number four positions above the main diagonal (2) shows the shift by four categories towards more intensive use of the latest technologies. Similarly, below the main diagonal. If we applied the Wilcoxon signed-rank test for dependent variables (see the procedure for ordinal dependent data described in Ilstrup (1990) we would arrive at a test criterion value of 7.856. The achieved significance level is then 1,998401.10-15. It is therefore obvious that the respondents perceive the positive state differently from the normative state. In other words, they express their preference for a more intensive use of more intensive use of the latest technologies (e.g. video conferencing, mobile media, multimedia and computer-based applications with the use of computer networks). The graph below shows these changes of opinions visually for better illustration.

Figure 2: Graphical representation of the “changes” in the respondents’ opinions on the use of the latest technologies in education for employees as company managers perceive it (left side – normative state; right side – positive state).



Source: author

### 3. Conclusion

The latest technologies are playing an increasingly important role in education, including corporate education, in the global developments in this field. We have therefore studied the situation in the Czech Republic.

In our study, we have compared the difference between the normative and positive state of the application of the latest technologies (e.g. video conferencing, mobile media, multimedia and computer-based applications with the use of computer networks) in the framework of corporate education in the Czech Republic.

We discovered that the respondents perceive the positive state differently from the normative state. They expressed their preference for more intensive use of the latest technologies so that the education system can be more beneficial to the company and its employees.

In further research, we propose to focus on finding the reasons why the latest technologies are not used to the extent that the managers of the companies imagine.

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# THE IMPORTANCE AND PRECONDITIONS FOR AN EFFECTIVE CODE OF ETHICS AS A COMPANY MANAGEMENT TOOL IN THE GLOBAL ENVIRONMENT

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**Abstract.** Companies, in particular those with a global presence, have been facing increasing demands from their customers, business partners, as well as wider society, to behave ethically in the long-term. As a result, there has been an increase in the importance attached by organizations to having a code of ethics as a tool for ethical company management. The main purpose of such codes is to clearly establish and unequivocally state the rules and principles for the ethical behaviour of managers and employees, internally and externally, as well as towards each other. This article deals with the goals and the contents of codes of ethics, the principles behind their creation, the enforcement of those principles and the main pre-conditions required for ensuring their effectiveness. The empirical part of the article is based on research conducted on a sample set of 607 Czech companies. These companies were divided into four categories according to size. The tested hypothesis was set on the basis of the assumption that more than 50% of companies use the comments of their departments and employees when implementing changes to their code of ethics. All the tests and calculations of interval estimates were performed at the significance level of 0.05 using R-software. The tables were created in MS Excel. The statistical tests show that more than 50% of medium and large-sized companies take into account the comments of departments and staff prior to modifying their codes of ethics. The hypothesis was refuted for micro and small-sized companies.

**Keywords:** code of ethics, evaluation, global, effectiveness of ethical management

**JEL Classification:** M00, M14

## 1. Introduction

The globalization of national economies has, in the last decades, led to increased demands from a broad range of international stakeholders (customers, business partners, employees etc.), as well as society as a whole, for corporations to behave ethically, including the respect of intercultural differences, the effective solving of international ethical dilemmas and finding (or building) a consensus around the setting up of multinational or even global corporate ethical standards. (Gupta et al., 2017; Vokoun, 2016; Novák et al., 2016; Caha, 2017)

This applies mainly to multinational corporations (MNCs) and local subsidiaries foreign or international companies. A similar trend has been visible as regards the principles of corporate governance in the context of the globalized economy. (Jackson, 2013)



The main topic of this article, besides stressing the importance of codes of ethics in MNCs as well as other internationally operating companies, is the principles of creation and enforcement of codes of ethics in MNCs, important for the efficacy of ethical management.

The empirical analysis that forms part of the article is based on research conducted on a sample set of Czech companies with an international background. This research is focused on the development of their local codes of ethics, their evaluations and update on the basis of employee participation and/or comments. Employee participation in creating MNCs codes of ethics is perceived as one of the most important pre-requisites of their efficient implementation and enforcement in MNCs.

## **2. The theoretical part**

### **2.1 Codes of ethics as a corporate management tool in the global environment**

The corporate code of ethics (code of ethical conduct) has been the main, and also the most visible, tool of MNCs ethical management. (Ruiz-Rolando et al., 2016) The aim of corporate codes of ethics in MNCs is to clearly define and openly declare, both to the outside world and within the company itself, the common internationally applicable principles and rules of ethical behaviour that govern a MNC, its management, as well as its employees, in particular those that act on behalf of the organization and participate in its decision making. (Kaptein, 2013)

These rules do not only contain generally applicable ethical norms and practices, but also important principles of international professional practice (“*lege artis*”) that an MNC adheres to or requires. (European Parliament, 2006) In a wider sense, an international code of ethics can be perceived as a tool for a company to build its culture in an international setting.

The importance of a code of ethics in MNCs is, therefore, not only external or marketing oriented. The establishment of and adherence to the principles of internationally applicable ethical behaviour strengthens the professional and corporate identity of the employees of MNC, makes for easier recruiting and retention of quality employees, who are usually more sensitive to the corporate adherence to ethical standards, and makes working life in an international or culturally diversified organization more pleasant and productive. (Xia, 2010)

This is also due in part to the fact that the principles contained in a code of ethics not only contain the rules that an organization requires its employees to adhere to (and which apply to their remuneration), but also the principles the MNC adheres to in dealing with them. (Nakhle & Davoine, 2016)

### **2.2 The effectiveness of a code of ethics and its prerequisites in an international setting**

The effectiveness of a code of ethics as a management tool for both the external and internal relations of a MNC is not just a matter of course. (Kaptein, 2015) It is based on important prerequisites related to its content and the method of its creation, its use and application. (Adelstein & Clegg, 2016) This not only includes its correct orientation, clear and culturally unambiguous formulations, but also the tools by which the principles of the code are enforced within an organization. (Wolf, 2015)

Moreover, the efficiency and benefits of a code of ethics in MNC are not only based on the clear definition of the ethical rules, but also often on the process of its creation.

A code of ethics, created in an international setting, is usually more effective if it is the product of teamwork. Teamwork draws people together, not just from various sections of a corporation but also from various national cultures, to think about the ethical rules that should guide their behaviour, as well as the commitments that their organization should have to society and the international community as a whole.

### **2.3 Employee participation in code of ethics development**

When preparing a code of ethics in a MNC it is therefore necessary to take into account who should participate in its drafting. Ideally, this process should include those employees that are most likely to be personally affected by the introduction of such a code. The aim is not only to uncover ethical dilemmas that those involved in drafting the code may not have realized exist, or even comprehend, but also to support and motivate employees to adhere to the principles of the code. For similar reasons, consultations with customers, suppliers or local authorities may also be useful in some cases. (Hill & Rapp, 2014)

Decisions on how and how often a code of ethics should be revised or amended are important issues that should also be resolved during the preparation stage of a code of ethics. The correct solution to these “process” issues is often as important as the content of the code itself.

### **2.4 Code of ethics implementation tools in a multinational environment**

The practical implementation of a code of ethics in a MNC is usually based on several tools or measures. The simple internal and external publication of a code of ethics only gives face value to the implementation of the rules included in it. This form of “implementation” lacks efficacy and is often perceived as being more formal than real. (Ho & Oladinrin, 2016)

Additional tools for the implementation of a code of ethics include international training programmes and the establishment of a “hotline”. The latter offers support to employees and managers on complicated ethical intercultural situations.

What is even more effective is the incorporation of the principles defined in a code of ethics into a company’s international personnel directives and rules, in particular into those rules that either support the evaluation of employees or impose sanctions for non-adherence. In doing so, a code of ethics and in particular the adherence to it becomes one of the criteria for the continuous and regular assessment of employees and the performance of personnel activities and decision-making within an international organization.

### **2.5 Internationally efficient enforcement rules**

In promoting the application of a code of ethics, it is also important to confirm that its principles do not collide with other company day-to-day rules and/or managerial practices. (Cichoblazinski et al., 2015) In particular, the application of these both local and international practices should not interfere with corporate ethical guidelines, i.e. force employees to proceed in a way that contradicts the principles defined in the code of ethics.

An example of this is the question of whether it is possible that the unethical behaviour of employees towards customers is not mistakenly strengthened by the way in which the employee is remunerated. The possibility of employees bringing attention to these and similar issues as well as to coming up with suggestions for management rule amendments is an important tool of an efficient ethical management.

By far the most important factor in the promotion of a code of ethics in MNC is, however, managers leading by example. A 360-degree assessment, as one possibility, can help to verify how effective their example is.

### 3. The analytical part

#### 3.1 The sample set and the questionnaire survey

A sample set of companies consisting of all the size categories of companies in compliance with the EU nomenclature, with the stress on the basic spheres of the national economy and legal subjectivity was first selected in cooperation with the Czech Statistical Office. The sample consisted of 1420 companies. The questionnaire's empiric research was conducted in the second half of 2016 and was targeted at the heads of personnel departments. Apart from the basic information on the respondents: the company name and contact data, the company's scope of activity, and its economic results, the questionnaire contained eight items dealing with a code of ethics. The results of one of these items were used as the base for confirmation of the hypothesis, which is a part of the empiric part of this article.

The questionnaire research was conducted by student and academic researchers, while the respondents mostly replied in electronic form by means of an electronic reference within the Google – disc web platform; paper form was used minimally. As the questionnaire research was targeted, 607 filled-in questionnaires were returned, a rate of 42.75%. R statistical software was used to evaluate and process the data, and tables and graphs were prepared by means of the table calculator in Microsoft Excel.

The final structure of the obtained research sample according to the number of employees was as follows:

Micro-companies (< 10 employees)	141	23.2%
Small companies (10-50 employees)	179	29.5%
Medium-sized companies (50-249 employees)	164	27.0%
Large companies (≥ 250 employees)	123	20.3%
<b>Total number of companies</b>	<b>607</b>	<b>100%</b>

### 4. Methodology of the statistical verification of the hypothesis

One of the preconditions for a code of ethics to be effective is that the comments from departments and employees are integrated into it. We are convinced that more than half of companies do this, and we therefore formulated the following hypothesis which we have tried to confirm.

**More than 50 % of companies take into account the comments from departments and employees in the preparation of the code of ethics.**

We had the results of the questionnaire survey from 607 companies of various sizes available for data processing. 201 companies from the sample set stated that they had a code of ethics. We categorized these 201 companies into four groups: large companies (250 or more employees), medium companies (50-249 employees), small companies (10-49 employees) and micro companies (less than 10 employees) and examined the hypothesis in relation to the company size. Most large and a significant part of middle-sized companies had an international background.

The companies could only answer “yes” or “no” to the question “Comments on the code of ethics are a stimulus to its modifications”. Some companies left the question unanswered. In such cases we entered “no”. We compiled a table of the absolute and relative frequencies of the replies “yes” and “no”. On the basis of the frequencies obtained this way we performed one-selection tests on the proportion for the lower one-sided interval estimations for the proportion of the “yes” answer. The test itself examined the zero hypothesis that the proportion of the “yes” answer was less or equal to 0.5 against the alternative that the proportion was greater than 0.5. At the output we presented the testing characteristic p-value and the lower limit of the interval estimation. If the p-value was less than the significance level, and if the lower limit of the interval estimation was greater than 0.5, we would reject the zero hypothesis and the test would confirm at the given significance level that the number of companies that took into account the comments to the code of ethics from employees and departments was statistically significantly less than 50%. All the tests and calculations were performed at the significance level of 0.05 by means of **R** statistical software and the tables were prepared by means of MS EXCEL.

## 5. The results of the statistical processing

Table 1: Assessment of the hypothesis 4: Comments on the code of ethics are a stimulus to its modifications

	Comments on the code of ethics are a stimulus to its modifications		
	No	yes	total
Micro-company	7	10	17
Small company	24	18	42
Medium company	15	44	59
Large company	27	56	83

Source: Authors

Table 2: Assessment of the hypothesis 4: Comments on the code of ethics are a stimulus to its modifications (%)

	Comments on the code of ethics are a stimulus to its modifications	
	no	yes
Micro-company	41.2%	58.8%
Small company	57.1%	42.9%
Medium company	25.4%	74.6%
Large company	32.5%	67.5%

Source: Authors

Table 3: Results of the statistical tests

company size	testing statistics Z	p-value	lower limit of the interval estimation
Micro-company	0.728	0.233	0.393
Small company	-0.926	0.823	0.311
Medium company	3.775	$7.985 \cdot 10^{-5}$	0.643
Large company	3.183	$7.284 \cdot 10^{-4}$	0.586

Source: Authors

The results of the statistical tests show that the examined hypothesis was confirmed at the chosen significance level for medium and large companies, while it was not confirmed for micro-companies and small companies. Although the proportion ascertained by the questionnaire is greater than 50%, the test does not confirm that the real proportion is statistically significantly higher. The lower limit of the interval estimation is 39.3%. Among small companies this estimation of the real proportion dropped to 31.1%, while the proportion ascertained by means of the questionnaire is 42.9%, which is below the examined limit of 50%. The p-values are also significantly higher than the significance level of 0.05, the zero

hypothesis, that the real proportion is less or equal to 50% can therefore not be refuted. The situation is opposite in the groups of medium and large companies. The p-value is significantly lower than the significance level and the lower levels of the interval estimations significantly exceed the value of 50%. In the instance of medium companies, the lower level of the interval estimation of the real proportion is 64.3%, in large companies it is 58.8%.

## 6. Conclusion

The corporate code of ethics has become an important tool of ethical management in MNCs. Its aim is to clearly define and openly declare the common, internationally applicable principles and rules of ethical behaviour that govern a MNC, especially in a multicultural setting.

The effectiveness of a code of ethics as a management tool in a MNC is not a matter of course. It is based on important prerequisites related to its content and method of its creation, its use and application.

A code of ethics, created in an international setting, is usually more effective if it is the product of teamwork that draws people together from various national cultures to think about the ethical rules that should guide their behaviour, as well as about the commitments that their organization should have to the society and international community as a whole.

An empirical analysis confirmed the theses mentioned above. The statistical tests showed that more than 50% of medium-sized and large companies (often with an international background) take into account the comments of departments and staff prior to modifying their codes of ethics. The hypothesis was, however, refuted for micro-companies and for small companies with predominantly local background.

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# INNOVATION POTENTIAL IN SMALL AND MEDIUM COMPANIES IN THE CZECH REPUBLIC IN THE SEGMENT OF CIVIL ENGINEERING INDUSTRY

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**Abstract.** Big pressure is caused by globalization and new trend of Industry 4.0 to improve entire aspects of firm's activities. Latest statistical data are suggesting decreasing trend in innovative tendencies of firms, especially in the segment of small and medium enterprises in the Czech Republic. This is going against common knowledge that small and medium enterprises are usually considered as drivers force for innovation. Common obstacle for innovation stated by firms is the lack of finances. In this light, it seems that organizational innovation can be the way for improving market position, increasing effectiveness and effectivity and for creating better culture in firms. There are still imperfections in current models of managing organization such as lack of stakeholder's internal motivation, missing leaders and moral authorities, low capability to accept responsibility or small coherence in firms. Paper focuses on small and medium enterprises approach to organizational innovation in civil engineering industry. This industry can be considered as one of the most non-transparent industry in the Czech Republic. It can be connected to instability of civil engineering industry coming from strong dependency on economic cycle and public investment. Building coherence, trust and loyalty in firm is more challenging in this segment. Factor which are influencing organizational innovation improving coherence in firms are evaluated through a case study.

**Keywords:** innovation, organization, management, corporate culture

**JEL Classification:** O31, O39, M14

## 1. Introduction

Innovations are considered as driver force in business. Innovative firms are leaders in their industry and set the way for future development. Firms which does not follow the innovation path can be endangered in their success. Also risks of a failure of business can be connected to that. The basic way to secure firms positions in the industry is continuous development and the search for opportunities to improve.

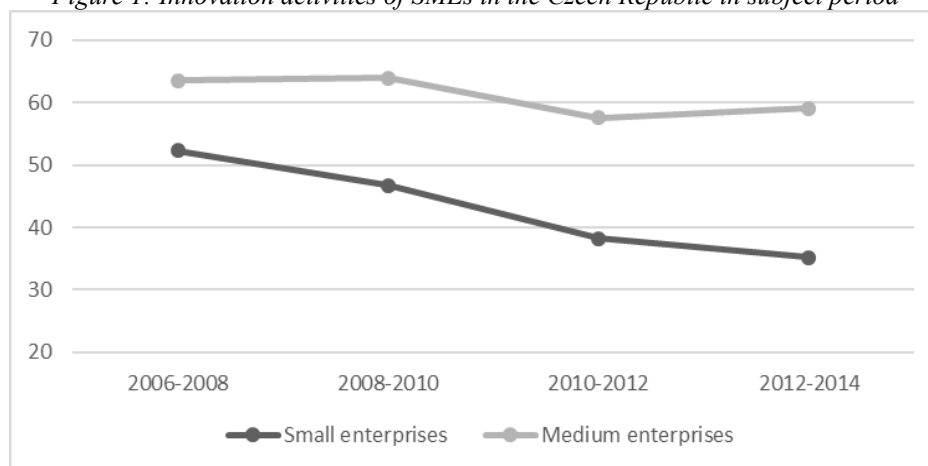
At the same time innovation is an important driver of economic development and brings other benefits such as improving living standards, increasing safety, improving health care, improving products and services, or enhancing environmental protection. Room for innovations can be found anywhere – at changing customer requirements, competition, the development of new technologies, changes in legislation or at the dynamics of a globalized market.

## 2. Innovation tendencies of SMEs in the Czech Republic

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. Basically, every activity of firm which leads to something new what improves.

Innovations can be distinguished to four different type of innovations (OECD, 2005): product innovations, process innovations, marketing innovations and organisational innovations. Product innovation is characterised as introduction of good or service that is new or significantly improved. Process innovation is characterised as an implementation of new or significantly improved production or delivery method. Marketing innovation is the implementation of new marketing method and organisational innovation is the implementation of new organisational method in firm. Common attributes of all innovations are novelty or improvement and realization of innovation in practise.

Figure 1: Innovation activities of SMEs in the Czech Republic in subject period



Source: Adapted from CSU, (2016).

Figure 1 shows trend of innovation activities of small and medium enterprises (SMEs) which has decreasing tendencies. It goes against common knowledge that SMES are usually driver force in innovations. Lack of finances combined with big cost is stated as main reason not to invest in innovation. (CSU, 2016) Organizational innovations can be the way to innovate with small or no costs. As example, change of behaviour of manager or team members, clearer communication or defined role of each employee can improve working environment without any costs and lead to better performance.

Implementation and use of organizational innovations are connected with changes. Change management require approaches for successful implementation since common reaction to change is resistance or rejection of change from employees. (Furst & Cable, 2008) Creation, implementation and use of innovation is better done in trustworthy environment where employees believe each other, their managers and the company as whole.

## 3. Innovation and trust

Trust can be defined as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. (Mayer et al., 1995) Another definition offers (Rousseau et al., 1998) as trust as “the intention or willingness to act



vulnerability based on positive expectations of the intentions or behaviour of others. That presumes two necessary characteristics of trust: willingness to be vulnerable and the positive expectations of the trustor. (Lewicki et al., 2006)

The model made by Mayer, Davies and Schoorman is dominant model of organizational trust. Their integrative model of organizational trust stands on three basic factors: ability, benevolence and integrity. (Mayer et al., 1995) Ability is defined as skills, competencies and characteristics. Benevolence is defined as the perception of the trustee that the trustor will do good to him. Integrity is defined as a set of principles and values of trustee which trustor accepts. Time has distinctive role in relation and influences importance of factors where benevolence effects trust more in longer relationships than other factors. (Schoorman et al., 2007)

The factors influencing building trust can also include personality traits, cognitive cues, societal structures, situational factors, beliefs and emotions. (Magnuson & Mattes, 2015)

Creating and implementing new ideas is linked to risks and uncertainties. Due to that, trust is necessary for the innovation process. (Shazi et al., 2015) Decision to trust is valuable to business as well as economic development. (Mislin et al., 2015) It can lower transaction costs (Arrow, 1974), lower employee turnover (Dirks & Ferrin, 2002) or reduce monitoring costs (Frank, 1988).

Civil engineering industry has been criticized for variable performance and project delivery. (Baiden et al., 2006) It contains complex working relationships and interrelations (Bresnen et al., 2004) and conflicts connected with restrictive terms and subcontracting. (Li et al., 2001)

#### **4. Methodology**

This study is made by case study research. The main source of data is semi-structured interviews with members of one department of company. Focus was to generate an authentic and informed responses of respondent's experiences. (Silverman, 2001) Each interview took around half hour in the mother tongue of interviewees and interviewers. All interviews were recorded and transcribed later. Notes and observation of functioning of team were also used in the analysis. No objective measurements were used.

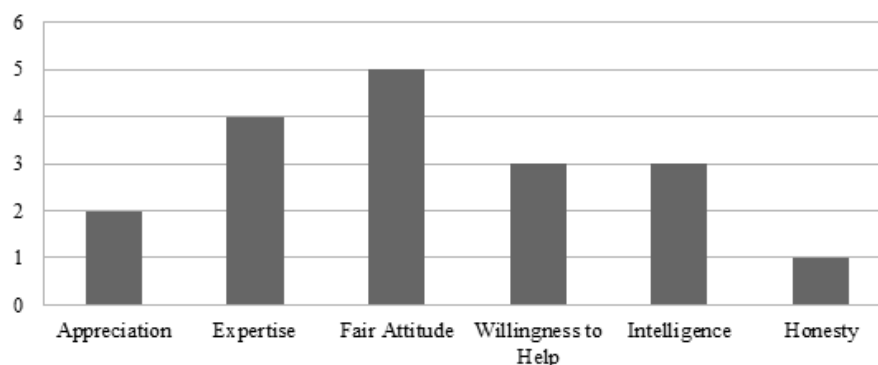
Observed team has five members with one direct manager, the oldest member is with the company for 25 years, newest member for two years. The team has new manager currently. It creates unique situation for future research where the formation of trust within the team can be subjected to research from the beginning. In this paper only initial remarks are made on that.

The main question of this research was to determine if the trust between team members and their manager is influenced by working in civil engineering industry. Initial questions define the base line for this question.

#### **5. Results**

The members of the team work in civil engineering for 24 years in average, with 10 years the shortest, 36 years the longest. Only one member of the team never worked in different industry. They have experiences with different kind of managers in different companies. As they stated, they respected all of them as superiors, but about one of third not as persons because of their character. When they were asked about the time, they stated that it takes months with maximum half a year to build the trust in their manager. It is consistent with theories that time perspective is necessary part of building trust.

Figure 2: Important characteristic of building trust in manager

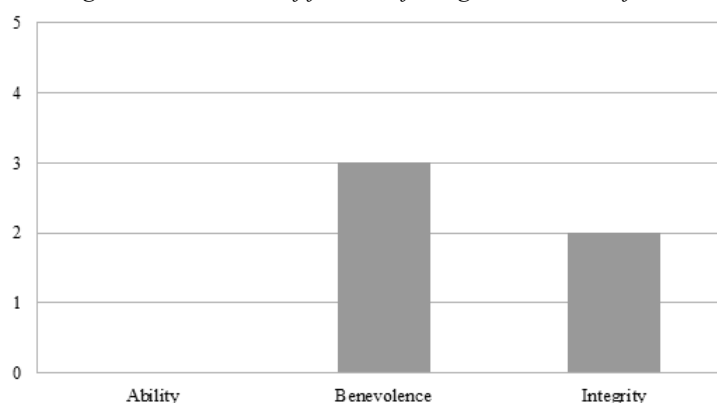


Source: Own processing

Members of team were asked about main characteristic of manager which will help to build the trust between them and the manager. All of them mentioned fair attitude toward them. Also his expertise in the field, willingness to help and intelligence was found as important.

All of the members of team have awareness about situation in the civil engineering industry, but only one of them ever considered to find a job in different sphere. It never happened because „I would not know where to go”. It was stated that they feel no influence of industry on their building trust process in manager. The main reasons were “it is the same everywhere” and “it is always about people”.

Figure 3: Relevance of factors of integrative model of trust



Source: Own processing

Starting point for this research was the integrative model of trust made by Mayer, Davies and Schoorman, so the members of the team were asked to decide which factor (ability, benevolence and integrity) they find as the most important. Figure 3 shows that answers were spread between benevolence and integrity. Based on that, personal skills are more important for building trust in team for long run. As it was said by one member “he can be expert but if he does not have a character, I do not trust him”.

## 6. Conclusion

Research was strongly influenced by new situation in interviewed team, introducing new team manager. Members of the team required to be expert in the field from the manager in order to build the trust in him. If they were questioned about the integrative model of trust, not one mentioned ability as the main requirement for building trust. It is clear that the communication

of new manager arrival and emotions connected with that were underestimated. Clear definition of new manager's role is missing also. Strong ties within the team members are part of the problem since they are together for long period of time. Future research can show development in building trust between the team members and their manager.

There was found no influence of civil industry engineering on building trust in manager – employee relation. Personal traits, openness and fairness of manager are basic for trust to be build. It must be noted that building trust is complex process with many factors to consider. Small and medium companies still underestimate the importance of good communication, dynamics and ties in already formed teams. If these problems are not addressed properly, companies lose useful resources for creation innovations, improvement of performance and strengthening their position in globalized world.

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# GREEN LOGISTICS AS A PART OF CORPORATE SOCIAL RESPONSIBILITY IN THE PROCESS OF GLOBALIZATION

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**Abstract.** To maintain a competitive advantage, companies' ability to adopt methods and techniques in the field of energy efficiency enhancement enhances customer loyalty and builds an image and also helps to demonstrate the energy and environmental responsibility of the business. The use of energy in individual areas of the enterprise is influenced by the different technologies, processes and products used energy sources and prices, political, economic and business situation. When we extend the environment to society as such, we can talk about sustainable logistics. By integrating energy use and sustainable green logistics, we can contribute to energy efficiency in production and green logistics. The article deals with the application of green logistics as a part of Corporate Social Responsibility in the ongoing process of globalization. The key to understanding the CSR concept is the organization's goal. A socially responsible company is not only aimed at maximizing profits, but its goals are based on the needs of the internal and external environment and include the social and environmental aspects of its activities. The aim of this article is to focus on the most important application areas of corporate social responsibility associated with green marketing in the globalization process, where social interactions are being interconnected, linking different sites in such a way that events occurring in geographically distant areas affect events occurring at home.

**Keywords:** Corporate Social Responsibility, Green Logistics, Globalization

**JEL Classification:** M15

## 1. Introduction

Modern enterprise management in the time of globalization asks to use new methods and tools to eliminate threats, risks, and constraints and also to maintain the market competitiveness. Modern management in this era needs the application of an unconventional approach and new managerial tools in praxis. To this change came information and communication technology in all parts of the companies. Flexibility and the ability to respond promptly and accurately to the changes becomes a huge competitive asset. Societal and competitive pressures as well as legislation elevate the attention companies pay to environmental and social effects of their supply chain activities. (Stindt, 2017) Only those companies that are able to fulfil given requirements have a chance to survive. Globalization affects the economy, business life, society and environment in different way and almost all corporations have been affected by these changes. We can see these changes mostly related with increasing competition and the rapid

changing of the technology and information transfer. This issue makes corporations more profit oriented than a long term and sustainable company. (Sobczak, 2006) The article deals with the application of green Marketing and green Logistics as a part of Corporate Social Responsibility in the ongoing process of globalization.

Nowadays, in all areas of life, there is an increasing trend in environmental protection. If a business wants to be successful today, competitive, and ultimately popular with customers, it has to adapt to the trend. Last but not least, modern marketing environmentally oriented the so-called Environmental marketing, ecomarketing, and "green" marketing. At present, in modern businesses, environmental marketing is seen as a significant competitive advantage, investing in the future, or building a good image in the eyes of customers. (Roberts, 2003)

Green Logistics consists of all activities related to the eco-efficient management of the forward and reverse flows of products and information between the point of origin and the point of consumption whose purpose is to meet or exceed customer demand. Lee & Klassen (2008) describe green logistics as Green Supply Chain Management that can be defined as an organizations activity taking into account environmental issues and integrating it into supply chain management in order to change the environmental performance of suppliers and customers. In this regard, Green supply chain management, emerged as an environmental strategy that not only improves the environmental performance of individual organizations, but also that of the entire supply chain which has also been accepted by industries. (Govindan et al. 2016) Green Supply Chain Management (GSCM) concepts have become an important issue that can play a pivotal role in a company's competitive advantage and help strategic decision making. GSCM is a concept, by which companies assess their suppliers to improve the environmental performance of their products or production processes of the suppliers. (Sivaprakasam et al., 2015)

Corporate Social Responsibility is an evolving concept without a clear definition, yet it describes a set of corporate obligations and practices somewhere on the spectrum between traditional charitable giving on one hand and merely strict compliance with the law, on the other. While operating definition remains elusive, the term "CSR" generally refers to a company's efforts to explicitly involve social and environmental concerns in its decision-making along with a commitment to increasing the organization's positive impact on Society.

In summary, during the process of Globalisation, there are the emergence of the global problems and negative consequences, such as global warming and climate change, the increasing unequal distribution of income and welfare, the abuse and invasion of human rights and others. (Kliestik et al., 2015) These elements promote the focus and implement of corporate social responsibilities when multinational corporates employ international business and trade. Moreover, the worldwide competition and consumers' and shareholders' perception make the firms recognize and rethink corporate social responsibility and decision making process concerning environmental, social and ethical issues. (Musa et al., 2016)

## **2. Green marketing and green logistics**

A part of the scale economy and competitive advantage as the main advantages, the globalized organizations are deeply involved in achieving sustainability and greening the global economy. (Negulescu, 2014) In addition to traditional business reliability and business ethics, environmental considerations also play an important role in the company's reputation. The classic marketing mix in the business replaces the green marketing mix. The green concept of product design, sales and sponsorship orientation, public relations, green transport, product and

packaging reprocessing, programs to minimize waste generation as well as product labelling to inform consumers about meeting environmental standards and many other examples can be included in "Green" strategy of a modern enterprise. Consumers around the world increasingly prefer organic products, but on the other they expect more from the businesses that offer such products. Green marketing is therefore an indispensable tool in influencing consumption towards responsible environmental behaviour. However, the implementation of sustainable development "that meets the basic needs of all people without compromising the ability of future generations to meet their own life-sustaining needs. (Sauer & Seuring, 2017)

Typically, Logistics is seen as the actions of which the objective is to minimize costs and maximize profits. The term was used mostly in purely business areas exhibiting companies and in financial reports. But, for many years, the term logistics was used in conjunction with the "green" by creating "Green Logistics" - the term containing costs, yet did not appear on financial reports and on the environment and society. The term "green logistics" is defined as supply chain management practices and strategies that reduce the environmental and energy footprint of freight distribution, which focuses on material handling, waste management, packaging and transport. (Rodrigue et al., 2012; Popescu et al., 2016) We adopt three moderating factors-market demand pull, regulation, and technology push-that strengthen the positive effect of proactive environmental strategies on reverse Logistics management. (Hsu & Liao, 2014)

## 2.1 Green Marketing

Green marketing refers to the process of selling products and/or services based on their environmental benefits. Such a product or service may be environmentally friendly in itself or produced in an environmentally friendly way, including:

- Being manufactured in a sustainable fashion
- Not containing toxic materials or ozone-depleting substances
- Able to be recycled and/or is produced from recycled materials
- Being made from renewable materials (such as bamboo, etc.)
- Not making use of excessive packaging
- Being designed to be repairable and not "throwaway"

Green marketing is typically practiced by companies that are committed to sustainable development and corporate social responsibility. More organizations are making an effort to implement sustainable business practices as they recognize that in doing so they can make their products more attractive to consumers and also reduce expenses, including packaging, transportation, energy/water usage, etc. Businesses are increasingly discovering that demonstrating a high level of social responsibility can increase brand loyalty among socially conscious consumers. The obvious assumption of green marketing is that potential consumers will view a product or service's "greenness" as a benefit and base their buying decision accordingly. (Majerova, 2015) The not-so-obvious assumption is that consumers will be willing to pay more for green products than they would for a less-green comparable alternative product.

## 2.2 Green Logistics

Green logistics activities include measuring the environmental impact of different distribution strategies, reducing the energy usage in logistics activities, reducing waste and managing its treatment. (Sibihi & Eglese, 2009; Nica et al., 2016) From the sustainable development point of view, green logistics can be defined as, "producing and distributing goods in a sustainable way, taking account of environmental and social factors". This broad definition

of green logistics is in line with the WCED (1987) definition of sustainable development and definitions of corporate responsibility.

The three pillars of Sustainable Development can be applied to green logistics (Fig. 1). As mentioned in the definitions of green logistics before, in the past, companies coordinated their logistics activities comprising freight transport, warehousing, packaging, materials handling and data collection and management to meet customer requirements at minimum cost which just refers to the monetary terms. (Nowakowska-Grunt, 2008) Now, the environment has become a concern. It is treated as a factor of the cost. Some companies have already taken external costs of logistics associated especially with the environmental issues such as climate change, pollution and noise into account. Green logistics is therefore defined as efforts to examine ways of reducing these externalities and achieving a more sustainable balance between environmental, economic and social objectives, (see Fig. 1). All efforts in the “green” logistics area are therefore focused on contributing towards, and ensuring, sustainability.

Figure 1: Green logistic as an element of sustainable development



Source: Seroka-Stolka, (2014).

Over the past 40 years, "Green Logistics" has represented a lot of nature trails, the most distinguishable as follows:

- reduction in transport costs,
- city logistics,
- corporate environmental strategies towards logistics,
- reverse logistics,
- green supply chain management.

### 3. Corporate Social Responsibility

CSR is a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis. Being socially responsible means not only fulfilling legal expectations, but also going beyond compliance and investing “more” into human capital, the environment and the relations with stakeholders”. (Commission of European Communities, 2001) Among many CSR definitions, there is one that catches attention; it has its place in the strategy “Europe 2020”, which replaces Lisbon Strategy. According to it, CSR is “A concept, according to which businesses freely accept social and environmental issues among their activities; responsibility of business for its influence on the society”



### 3.1 Conceptual Framework of CSR

Wisser (2007) states that Corporate Social Responsibility also called corporate conscience; corporate citizenship, social performance or sustainable responsible business is a form of corporate self-regulation integrated into a business model. CSR policy functions as a built-in self-regulating mechanism whereby business monitors and ensures that its activities comply with the spirit of the law, ethical standards and international norms. Commenting on Corporate Social Responsibility Hohnen (2007) remarks, that organizations do not have ethics, rather they relate to their environment in ways that often involve ethical dilemmas and decisions. These situations are generally referred to within the context of the organization's social responsibility.

### 3.2 Key drivers of corporate social responsibility

Some of the key drivers of Corporate Social Responsibility are highlighted below.

- **Need for enhanced market leadership:** A distinct justification for socially responsible behaviours on the part of organizations is that those that make visible contributions to society can achieve enhanced reputation and gather greater market share for their products.
- **License to operate:** Organizations need to have genuine relations with government of their host environment. This practice can lead to reduced shareholder activation and reduced risk of law suits which tend to place organizations in bad light in the public opinion.
- **Business as private citizen:** Because organizations are legally defined entities with most of the privileges as private citizens, they should not evade society obligations as citizens. Advocates of these multinational organizations often have surplus revenues that could potentially be used to help solve social problems.
- **Increased reputational capital:** Proponents of good Corporate Social Responsibility point to the fact that organizations that involve in CSR stand good chances of garnering unquantifiable reputational capital. This can be translated into reduced negative consumer activism/boycotts; positive media coverage/"free advertising": positive word of mouth advertising, and increased community support for the company's operations ("a bank account of goodwill").
- **Growth in Global Reporting Initiatives (GRI):** Launched in 1997 by the coalition of Environmentally Responsible Economies, the GRI reports contain 50 core environmental, social and economic indicators for a broad range of companies.

## 4. Effects of globalization on CSR and green logistics

Global enterprises are permanently trying to develop new, flexible, applicable and innovative methods to enhance their success and competitiveness. Some of these organizations are enhancing their competitiveness through improvements in their environmental activities performance to comply with environmental law and regulations. To response the requirement of environmental law and regulations, minimum standards of environmental performance have become increasingly prevalent in the purchasing agreements of multinational corporations for their local and global suppliers. This requirement has become a new customer expectation from suppliers therefore suppliers have to reduce costs and improve quality and service to complete their responsibility for their customers. Although sustainable supply chain (SC) management has been widely investigated in recent years, the focus has mainly been on the practices adopted by a single company, so missing the big picture at SC level. (Golini et al., 2017)

#### **4.1 Effects of Globalization on CSR**

In accordance with the theoretical perspective, there are two aspects of the effect of globalisation on corporate social responsibility. First, economic growth not only makes the public and national governments concentrate on welfare augmentation and its benefits for the society, but also makes them recognize that economic development is the consequence of the combination of social, economic and moral implications in ideal environment, economic growth will provide the equal distribution of income and welfare, the respect and protection of human rights and other aspects, which all people will share. However, globalisation to a certain extent further intensifies the phenomenon on inequality. During this process, who to be responsible for the balance between economic growth and inequality is considered as the significant path of coping with the negative consequences of globalisation. (Dekker et al., 2012)

Second, during the process of globalisation, the firms can maximize the efficiency and the performance of firms' business through the worldwide allocation of resources. Nevertheless, the firms encounter the fierce competition beyond the spectrum of country or area. The competition not only brings more value and interests for their consumers, but also makes firms rethink their concerns of social, ethical and environmental issues and decision making process. There is a fact that more and more consumers concern the perception of firms' environmental and social issues and socially responsible behaviours. Furthermore, the shareholders and stakeholders also focus on the implement of the strategies on environment and social communities.

#### **4.2 Effects of globalization on supply chains (green logistics)**

The greening of logistics activities and supply chains means ensuring that these activities are environmentally friendly and not wasteful, and particularly focus on reducing carbon emissions across the entire supply chain. The World Economic Forum (2009) argued that a collaborative responsibility for greening the supply chain resides with three groups: logistics and transport service providers, shippers and buyers as recipients of such services, and both government and non-government policy makers. (Miao et al., 2012)

Logistics and transport service providers should increase adoption of new technologies, fuels and associated processes where there is a positive business case, deploy network reviews of large closed networks to ensure efficient hierarchies and nodal structures, look to integrate optimization efforts across multiple networks, enable further collaboration between multiple shippers and/or between carriers and look to switch to more environmentally friendly modes within their own networks.

Shippers and buyers can take decisions that actively drive positive change up and down the supply chain. Shippers and buyers should agree additional standards and targets on packaging weight and elimination, and seek cross-industry agreements on modularization of transit packaging materials. They should also develop sustainable sourcing policies that consider the carbon impact of primary production, manufacturing and rework activities, and integrate carbon emissions impact into the business case for near-shoring projects. Future research opportunities fall into four major themes: the need for theoretically grounded research, the need for a multi-functional approach, the need for a systems approach that adds strategic insight, and the need for integrated measurement application. (Mollenkopf et al., 2010)

## 5. Conclusion

Corporate Social Responsibility brings a new look at the role of a company in the company's awareness of the link between profitability and the environmental and ethical standard of business. Companies are increasingly focusing on improving business relationships - employee, business - partner. Corporate social responsibility can be considered as a source of competitive advantage and innovation that helps the market to remain in the market.

The importance of green Logistics lies not only in the optimization of Logistics as a whole, but also in increasing the legislative requirements of the state to work with returnable packaging, waste and other materials. The growth of its importance also contributes to the promotion of a "green" way of thinking, when managers focus not only on economic indicators, but also try to put the company's activities into an ecological context. Globalization and the growing need for environmental and material protection resources requires a significant improvement in the coordination of different forms of activities and emergence of the new Internet market, logistics becomes even more complex.

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# THE IMPACT OF GLOBALIZATION ON THE PERFORMANCE OF THE RAILWAY SIDINGS OPERATION BASED ON SELECTED INDICATORS

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**Abstract.** Transport performance of rail freight transport in Slovakia is mostly in the regime of international transport. International transport share of total transport volume is about 80% and it is obvious that the transport volume in the rail transport depends on the behavior of world markets. This fact influences international transport flows of goods and performance of the rail transport. Railway sidings also have a significant share of rail transport performance. Transport performance in rail freight transport has decreasing trend over the last 20 years. Decreasing of transport volume in railway transport is influenced by several factors. The most important factors are strong competition from road transport, higher costs and prices in the rail transport, non-flexibility of the rail transport and others. These factors lead to the loss of railway sidings position on the transport market. Many railway sidings have a valid operating licence however; their transport performance is very poor or none. On the other side there are railway sidings with expired operating licence which abolition is protracted, financially and legally demanding. Nevertheless, the railway siding is very important part of international rail freight transport operation. The paper focuses on the examining of the railway siding performance share in overall rail transport performance and it contains dependence analysis of railway siding performance to selected criteria: total transport volume in international transport, transport price and number of railway siding service. Partial goal of paper is the analysis of active and no-active railway sidings.

**Keywords:** international transport performance, railway transport, railway siding, dependence analysis

**JEL Classification:** L 92

## 1. Introduction

Increasing international integration is one of the characteristics of the world economy and this integration process results in the globalization of international trade. Transport is a significant part of international trade and railway transport in particular has an irreplaceable position in the world economy. (Záhumenská et al., 2017) Railway sidings are an important part of rail transport and they have a significant share of the rail transport performance. Railway

sidings in the Slovak Republic account for about 70% of the total rail transport volume. (Abramovič et al., 2014) The Slovak economy is part of the world economy and the behaviour of world markets influence whole areas of the national economy, including railway transport. The economy of the Slovak Republic saw a transformation process from a planned economy to a market economy. (Dolinayová et al., 2016) This caused changes in the transport market and resulted in railway transport losing its position in the market and national economy. The transformation process of the economy decreased the number of railway sidings, but they didn't lose their position in the railway market. (Gašparík et al., 2016) The importance of railway sidings as a part of railway transport is shown in the correlation analysis of the rail transport performance, costs in rail transport and performance. Research is oriented on the Košice region in Slovakia.

## **2. Globalization and the transport market**

The International Monetary Fund defines globalization as a historical process, the result of human innovation and technological progress. Globalization means the growing integration of global economic dependence. The dependence of the global economy is carried out through the transaction of goods, services and economic capital crossing international borders. Križanová (2014) and Buková (2016) said that up until 2019, the leaders of global economic growth will be countries and markets from Asia and Africa. The Slovak economy will still depend on European Union trade, as was the case in 2016 when exports from Slovakia to the EU made up 82.81% of the total while imports accounted for 62.5%. (Krizanova et al., 2014)

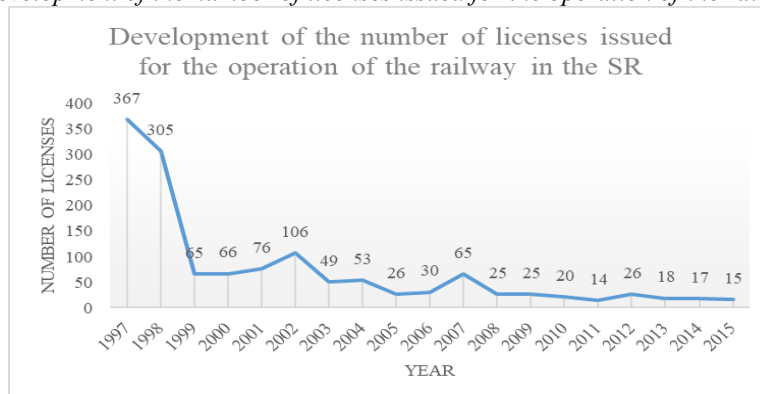
Transport, which is one of the sectors in the EU, creates gross added value to an economy. In his study, Horniakova says that transport in 2011 had a 4.7% share of the total added value of the EU expressed at the current prices. (Buková et al., 2016) Based on the same study, the most important impact on the added value of the transport mode is provided by land transport (road transport, rail transport and pipeline transport). Within the land transport market, road transport (about 70 -80%, it depends on the EU county) accounts for the biggest share, followed by rail transport and pipeline transport. (Francesco et al., 2016) The position of railway transport in the market in the Slovak Republic is the almost the same as in other EU member states. The performance based on transport volume is about 20% in the last ten years. (Horniaková, 2014)

## **3. Development analysis of railway sidings in the Slovak Republic**

In the past, railway transport was the most used transport mode in terms of passengers and freight. Railway transport started to lose its position in the transport market in the global economy in the second half of last century. (Kudláč et al., 2017) Road transport has taken over its position in the market. The Slovak economy and market copied the trend in the world economy after the transformation process in 1989, when the Slovak economy became part of the global market economy. This process saw less railway sidings in operation. Railway sidings in the past were built near great manufacturing facilities and the majority of production was transported by rail transport. (Černá et al., 2012) The current trend of using railway sidings is oriented on their destruction. Railway sidings are no longer in the rail process because their operation is mostly inefficient and costly. Another problem is the high cost to build new railway infrastructure near the new logistic centres. (Zitrický, 2016)

Figure 1 shows the number of infrastructure operational licences (railway siding operation licences) in the Slovak Republic between 1997 and 2015. These licenses were issued by the Transport Authority of the Slovak Republic under the railway infrastructure law.

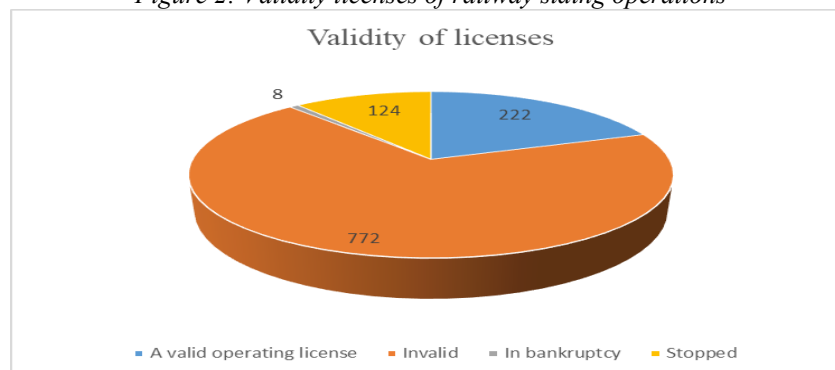
Figure 1: Development of the number of licenses issued for the operation of the railway in the SR



Source: Transport Authority of SR

After 1998 the number of issued licences for the operation of railway sidings decreased due to falling demand. The first small change can be seen in 2002 and this was the year that the Railways of the Slovak Republic were transformed by the legislative of the EU. The second small change in the negative trend was caused by the full opening of the rail market to competition. Figure 2 shows the validity license of railway siding operations in 2016 in the Slovak Republic.

Figure 2: Validity licenses of railway siding operations



Source: Hricišonová, (2017).

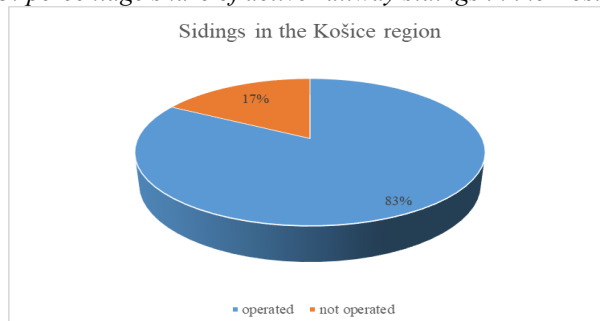
In the Slovak Republic there are 772 railway sidings which don't have a valid license for operation, which in turn means they are not being operated. Some 222 railway sidings have a valid license for operation while eight railway sidings are in bankruptcy. The low number of operated railway sidings is due to the influence of the global market and the structure of the Slovak national economy that are characterized above. (Hricišonová, 2017; Meško et al. 2016)

### 3.1 Analysis of railway sidings operation in the Košice region

In the Košice region, 93 railway sidings were registered in 2016. These registered railway sidings are directly connected to the infrastructure of the national infrastructure manager – ŽSR (Railways of the Slovak Republic). Railways sidings that are directly connected to the national rail infrastructure are called “railway sidings of first sequence”. The national infrastructure manager in the Slovak Republic only registers the first sequence of railway sidings. Railway sidings that are connected to the infrastructure of another railway siding (railway siding of

second or third sequence) are not registered in the database of ŽSR. Figure 3 shows the percentage share of active railway sidings in the Košice region. There are 16 non-active railway sidings from the first sequence, while another 77 railway sidings are active. (Hricišonová, 2017)

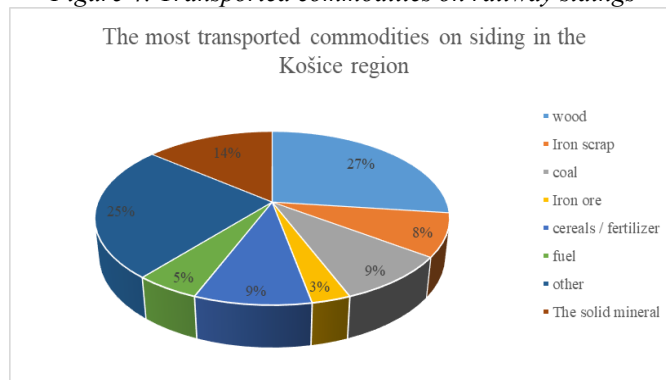
Figure 3: percentage share of active railway sidings in the Košice region



Source: Hricišonová, (2017).

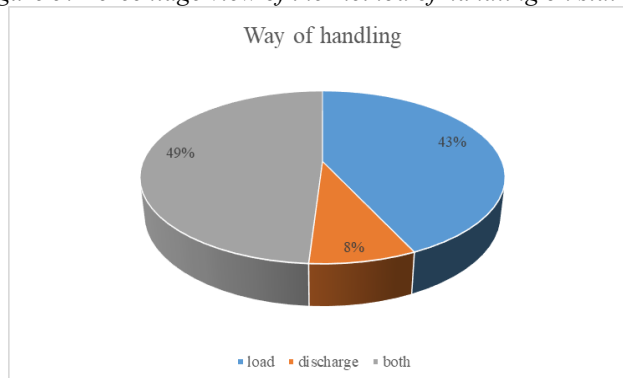
The most transported commodities on the selected railway sidings in Košice region are wood and minerals (magnesite, limestone, and dolomite). After that, the next most transported commodities are gas, metallurgical products, intermodal transport units, foodstuff, chemical products and other nonspecific goods. Companies that used railway sidings only for the unloading of goods, move their produced products via road transport. Figure 4 shows the percentage share of commodities that are transported on railway sidings in the Košice region. (Hricišonová, 2017). Figure 5 shows the percentage distribution of railway sidings which are oriented towards loading or unloading operations, including ones which carry out both operations.

Figure 4: Transported commodities on railway sidings



Source: Hricišonová, (2017).

Figure 5: Percentage view of the method of handling on siding in



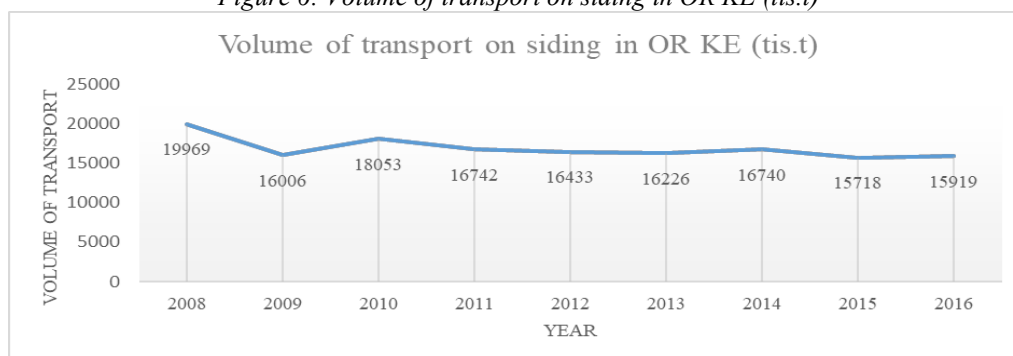
Source: Hricišonová, (2017).



37 railway sidings have common loading operations, while there are 32 railway sidings that just have loading operations and 8 railway sidings just for unloading operations.

Figure 6 shows the transport volume of railway sidings in the Košice region between 2008 and 2016. (Mašek et al., 2016) The decrease in the transport performance of railway sidings in 2009 was caused by the global financial crisis. Based on this fact, we can see the negative influence of globalization on the rail transport performance and railway sidings operation. The situation has stabilized since the global financial crisis, but the transport performance on railway sidings has not achieved the values seen before the crisis. (Schwartzová, 2013)

Figure 6: Volume of transport on siding in OR KE (tis.t)



Source: Hricišonová, (2017).

### 3.2 Dependence of railway sidings performance on the basis of selected indicators in the Kosice region

Dependence analysis is oriented on the relation between: rail transport price and transport volume on the railway sidings, number of railway sidings in the Košice region and the total transport volume of rail freight transport and total transport volume of rail freight transport and transport volume on railway sidings in the Košice region. Correlation analysis is used for the dependence analysis of the railways sidings performance and selected criteria. (Palkovič, 2016) Based on Benko's definition "Correlation is a mutual linear relation (dependence) of two random variables X and Y. This relation can be direct (if one variable increases, then the second variable increases, too), or indirect (with one variable growth there is a fall of the second one)". The mathematical calculation, which results in numerical data showing the dependence of two or more elements of a statistical data-set, is called a correlation number. The correlation coefficient  $r(x, y)$  represents the dependency of two variables,  $x$  and  $y$ , from the statistical data-set. This dependence is expressed with a statistic covariance  $cov(x, y)$  (Palkovič, 2016):

$$cov_{(x,y)} = \frac{1}{n-1} * \sum_{i=1}^n (x_i - \bar{x}) * (y_i - \bar{y}) \quad (1)$$

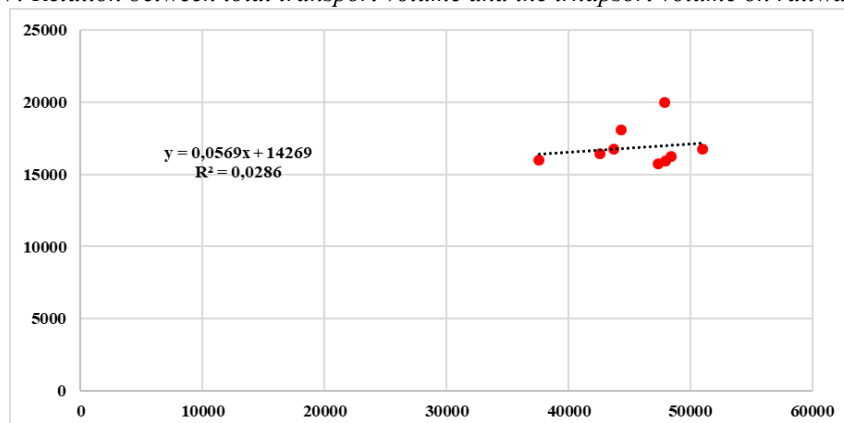
After calculating  $cov(x, y)$ , we can further determine the correlation coefficient according to the formula:

$$r_{(x,y)} = \frac{k_{(x,y)}}{s_x * s_y} \quad (2)$$

Palkovič says the value of correlation coefficient expresses a linear degree of dependency of variables  $x$  and  $y$ . The value of correlation coefficient is from -1 to 1. When the values of correlation coefficient are 0, there exists no relation, i.e. no dependence between the variables. When the value is 1, then the variables are directly dependent. When the value of correlation coefficient is -1, then the variables are indirectly dependent. (Palkovič, 2016)

Conclusion on the Figure 7 shows the correlation relation between the total transport volume of rail freight transport and transport volume on railway sidings in Košice region

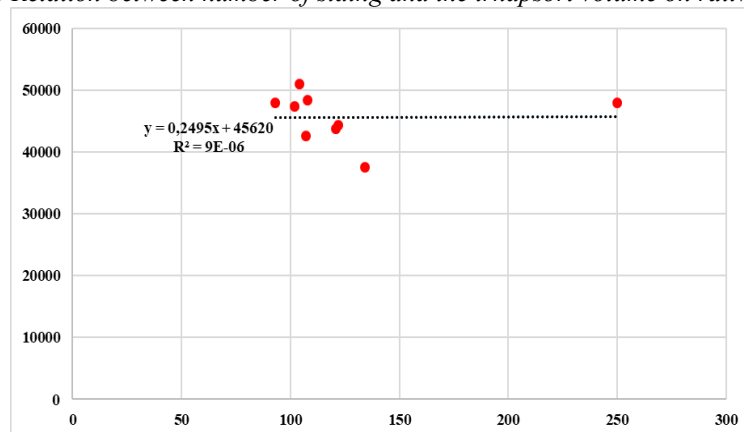
Figure 7: Relation between total transport volume and the transport volume on railway sidings



Source: Authors

Based on the calculated correlation between total transport volume of rail freight transport and transport volume on railway sidings in Košice region we can claim a weak dependency. Correlation coefficient has a value 0.169. Low value of determination coefficient (2,86%) shows weak dependency between performance on railway sidings and total transport volume in rail transport. This fact can be caused by comparison only by performance in Košice region to total transport performance in Slovak republic. In the Figure 8 is a correlation analysis between the number of railway sidings in Košice region and total transport volume of rail freight transport.

Figure 8: Relation between number of siding and the transport volume on railway sidings

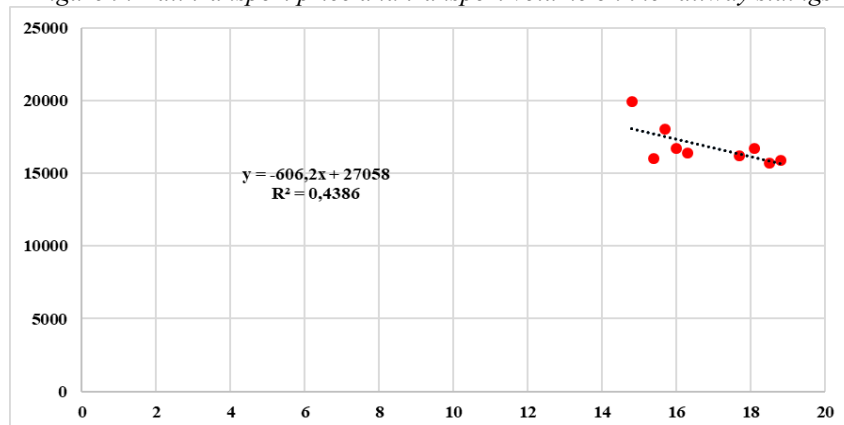


Source: Authors

Based on the calculated correlation between the number of railway sidings in Košice region and total transport volume of rail freight transport we can claim a medium dependency. Correlation coefficient has a value 0.003. Almost null value of determination coefficient means no dependency between transport performance on railway sidings and number of railway sidings. Results misrepresent the railway siding position in rail transport mode because based on study (Zitrický et al., 2016) percentage share of railway sidings in the rail transport volume is about 40%. In the Figure 9 is a correlation analysis between the transport volume of railway sidings in Košice region and rail transport price. Based on the correlation coefficient (-0,662) we can say that the dependency between transport price and transport volume of railway sidings is great. Based on the value of correlation coefficient we see indirect dependency. In this case

results of correlation analysis predict that low price level of rail transport influences transport volume on the railway sidings. Variability of transport performance on railway sidings is 43,9%. This value shows middle dependence between compared variables.

Figure 9: Rail transport price and transport volume on the railway sidings



Source: Authors

#### 4. Conclusion

Globalization is a process that influences many economics sectors. The globalization trend supported the growth of the Slovak economy after the transformation process in 1989. However, the impact of globalization hasn't been the only positive effect. For rail freight transport it has meant a decrease in transport performance and in many cases the termination of railway sidings. (Kirpichnikov et al., 2015) Nevertheless, railway sidings have their importance and a significant position in rail transport. Nevertheless, the correlation in two cases doesn't show dependency, but we can not to say that the railway sidings haven't the important position in railway operation. Globalization influence is representing in relation between transport price and transport performance on railway sidings and there are several possibilities to support this. The first way is state subvention of the railway infrastructure, especially railway sidings. The second method is legislative changes concerning the building of logistic centres. Part of the Slovak economic transformation was the building of many logistic centres, but only very few of them are connected to the railway infrastructure. (Fedorko et al., 2015).

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## LIFE-CYCLE COST ANALYSIS FOR RAIL CONTROL SYSTEMS

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**Abstract.** Railway infrastructure, as a part of global transport system, is a complex technical system that should deliver long life, high availability, safety and reliability as well as low maintenance cost. Railroad restructuring in many countries has led to separate infrastructure management. Infrastructure operators therefore should consider growing requirements of operating companies. To meet their requirements, infrastructure managers must continuously optimize operational and maintenance costs. Into budget planning they must include growing requirements for the reliability and availability of infrastructure as well as crucial issue – the traffic safety. The experiences of operating systems show that often engineering system ownership cost is many times greater than the cost of its acquisition. Therefore, today, in the global economy purchasing decisions of many technical systems, especially those expensive are not taken on the basis of preliminary acquisition costs. One of the methods, which is able to support right investment decisions-making is Life-Cycle Cost (LCC) analysis. It is suitable to determine the costs of the whole life cycle of the system, i.e. the costs of acquisition, operation and liquidation. Thus, it allows to minimize investment risk because it includes total calculation for each option and not just the initial investment costs. In the article the considerations will be conducted in relation to life-cycle cost for rail control systems. In their case, this is the part of recommended for use with this kind of system RAMS/LCC analysis. Requirements for RAMS/LCC analysis are defined in EU directives and its methodology is included in CENELEC standards.

**Keywords:** Life-Cycle Cost, LCC, railway traffic control systems, RAMS

**JEL Classification:** L92, R41, R42

### 1. Introduction

Recently, in the international railway transport is a great pressure, mainly from the railway operators, to upgrade railway infrastructure. The changes are also stimulated by the increasing quality and technical requirements for railway products and changes in standards and legal regulations. Due to the high costs associated with infrastructure modernization projects, they should be carefully analysed for their feasibility and cost effectiveness, which will not only allow to correctly select the scope of modernization but also to quantify its measurable economic effects. Normally, feasibility and cost-effectiveness analyses are carried out in several variants, which allow to compare the effectiveness of particular solutions in relation with the state of the existing, i.e. pre-modernization state. It should be remembered that

a comprehensive efficiency analysis must take into account all phases of the life cycle of a modernized object.

At the same time, in relation to the rail infrastructure and rail transport, in the analysis the question of ensuring a high level of safety cannot be omitted. In the railway industry the regulations in this regard are multifaceted. The European Union Directives are the basic documents containing the relevant recommendations, including Directive 2008/110/EC of 16 December 2008 on safety on the Community's railways (Railway Safety Directive) and Directive 2008/57/EC of 17 June 2008 on the interoperability of the rail system within the Community, which is a consolidated version of the existing interoperability directives for high speed rail (96/48/EC) and conventional rail. (2001/16/EC) In the train industry CENELEC (European Committee for Electrotechnical Standardization): standards are a next group of prescriptive documents concerning quality and the safety requirements. (EN-50126, EN-50128, EN-50129 and EN-50159)

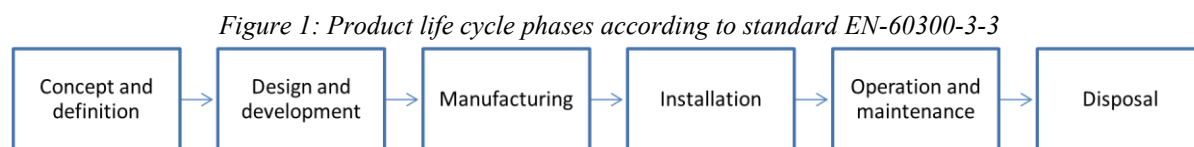
The International Railway Industry Standard (IRIS), developed under the auspices of UNIFE (European Railway Industry Association) and with the participation of major rail industry manufacturers (inter alia Bombardier Transportation, Alstom Transport, Siemens Transportation) has increasingly more importance. (Calixto, 2013) The quality requirements for railroad manufactured products included in the IRIS standard, concern among others: RAMS analysis (Reliability, Availability, Maintainability, Safety) and LCC (Life Cycle Cost) - analysis of the total life cycle cost of the product.

The standardized approach allows to combine both important aspects of the issue, i.e. the economic impact of the project and the availability, safety and reliability of the infrastructure throughout its life cycle. At the same time, it provides expressed in costs, comprehensive and clear information on the various consequences of the adopted modernization concepts.

## **2. Life cycle cost analysis**

The concept of product's life cycle was first published in 1965 by Theodore Levitt. Nevertheless, the analysis of life cycle cost, in a form similar to its present form, began to disseminate in the 1980's. In the years 1983 - 1984 the US Department of Defence issued a number of LCC analysis guides used by US commercial enterprises until today, for example (MIL-HDBK-259, 1983). After this period, the LCC analysis was disseminated to other industries, among others in energy sector, (Korczak et al., 2016), transportation (Lukasik et al., 2016) or oil industry. (Kawauchi & Rausand, 1999) Nowadays, LCC is often used as a decision-making tool for assessing the cost-effectiveness of alternative solutions whenever they are equally suitable to be implemented on technical grounds. In many countries, it is an element required by law during tender procedures.

The LCC of a technical object is the total cost incurred from the concept and design to the removal from the use. The understanding of the life cycle and actions taken in the subsequent phases of this cycle is essential for the LCC cost estimation concept. It is also important to understand the relationship between these actions and performance, reliability, maintainability and other technical properties of the object and the resulting costs. According to EN-60300-3-3 norm, the product's life cycle consists of the six main phases shown in Figure 1.



Source: own preparation based on (EN60300-3-3, 2017)

The total costs incurred in the mentioned above phases can be divided into Life Acquisition Costs (LAC), Life Ownership Costs (LOC) i Life Loss Costs (LLC). (EN60300-3-3, 2017; Kawauchi & Rausand, 1999)

$$LCC = LAC + LOC + LLC \quad (1)$$

Life acquisition costs or other investment costs are incurred mainly in the first four phases of the life cycle cost. They are, in fact, the only element of LCC's analysis that is easy to calculate prior to the decision of buying or upgrading.

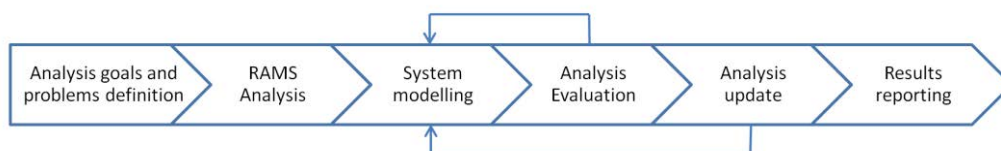
Life ownership costs related to lifetime of the technical system are incurred in the last four phases. It is much harder to perceive them, and even more serious is to estimate them. They are important not only for the buyer but also for the supplier, for example due to the need to provide an appropriate warranty period or technical support. The ownership costs are usually the highest component of costs and in many cases far exceed the acquisition costs. The authors know examples of analyses carried out for transport facilities and for means of transport, where the share of LOC in LCC ranged from 60% to over 90%. It is important to realize this proportion before buying or upgrading, in hence to avoid the negative surprise of high ownership costs in phase of the system operation.

The process of the identification and analysis all of the costs related to product acquiring and ownership is carried out for the assumed period of time or for the whole lifetime.

Life loss costs are connected with withdrawing the system from use and its possible disposal. In case of some facilities they can constitute the considerable part of overall LCC costs. This applies in particular to those facilities whose neutralization is extremely burdensome (for example radioactive materials) or technologically advanced and logistically complex (for example scrapping of ships, rail vehicles and rail infrastructure), etc. These costs are taken into account in the analysis when the assumed analysis horizon includes the stage withdrawal of an object from operation.

Calculation of individual cost components is possible using a variety procedures and estimations, for example: analogous cost estimating, parametric cost estimating, or engineering cost estimating. Among many different procedures for calculating LCC cost, EN 60300-3-3 norm offers a relatively compromise and universal approach. (Tulowiecki & Szkoda, 2007) The stages of this approach are shown in Figure 2.

*Figure 2: The basic steps in LCC analysis*



Source: own preparation based on (EN60300-3-3, 2017), (Kawauchi & Rausand, 1999)

The steps of this procedure for level crossing protection system (LCPS) will be described and discussed below.

### 3. LCC analysis for level crossing protection system

#### 3.1 Analysis goals and problems definition

The first step in LCC analysis is to identify the problem and determine the estimating aims. Typical analysis goals, expressed in output data categories, are (Siciliano et al., 2016; Tulowiecki & Szkoda, 2007): assessment of the impact of various modernization variants at the LCC cost, identification of cost elements for development work or optimization of modernization variants.

At this stage, the initial definition of characteristics and parameters of the LCC model is recommended. For LCPS these are, for example, the identification of LCPS structural characteristics, lifetime, vehicle, pedestrians and trains traffic estimation, number of staff, etc. It is also necessary to include the requirements of the operation and maintenance manual, such as: interim repairs, expected maintenance time, expected repairs and inspections, as well as traffic safety components, such as personnel training and safety verification.

#### 3.2 RAMS analysis for railway traffic control systems

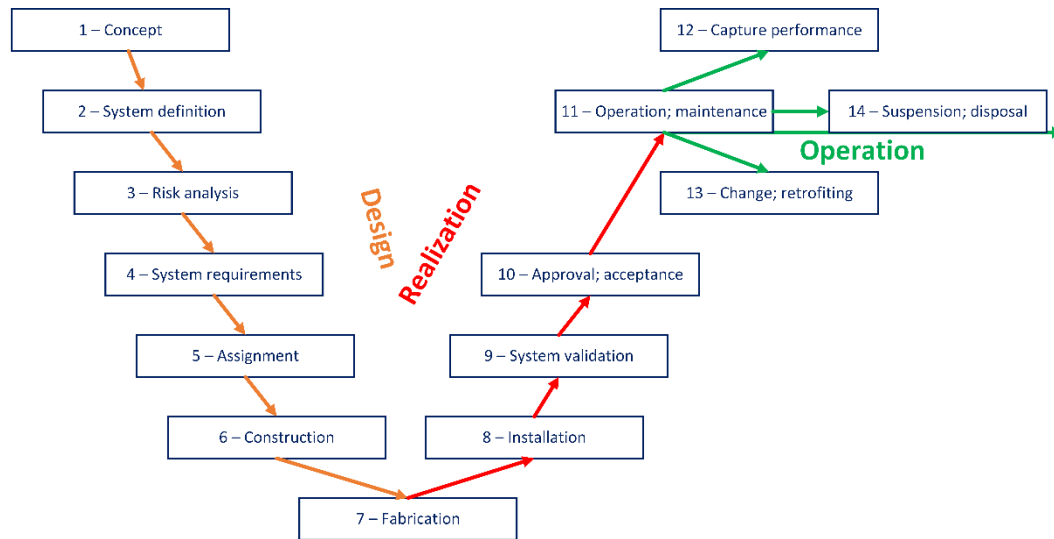
RAMS analysis is closely related to the CENELC standards for railway products, and especially to EN-50126 norm. According to this norm the producer of the railway traffic control system is obliged to conduct RAMS analysis, in the following evaluation criteria (EN50126, 2002):

1. *Reliability* – probability that the given product can perform required functions under given conditions for the given time interval: Mean Time Between Failures (MTBF), Mean Time To Failure (MTTF).
2. *Availability* – Ability of the product to be in the state to perform a required functions under given condition at a given instant of time or over given time interval assuming that the required external resources are provided (availability is expressed in the percent or as the probability).
3. *Maintainability* – probability of restoring the efficiency for object in the stated time: Mean Time To Repair (MTTR), Mean Time Between Maintenance (MTBM), Mean Time To Maintenance (MTTM), maintenance costs, operational costs.
4. *Safety* – freedom from an unacceptable risk of harm.

An EN 50129 standard is devoted to issues of analysis of threats and risk, as the combination of the probability and potential consequences of the determined dangerous event. This norm defines the safety as the lack of the unacceptable risk. The system is being regarded safe, if the risk is associated with the functioning of the system is acceptable. For railway traffic control systems safety integrity is specified as one of four discrete levels SIL (Safety Integrity Level). (Pniewski et al., 2016; Kornaszewski, 2008) According to the EN-50129 norm the risk analysis is carried out in a document called a "safety case". This document is required at the stage of system certification, after the completion of steps 1-6, in accordance with life cycle "V" model, as shown in Figure 3. Common Safety Method (CSM) in the scope of valuation and risk assessment helps to ensure the safety level of the Community railways. (Kornaszewski, 2008) The left side of the "V" model is determined in the norm as system development, whereas the right side is related with its installation, acceptance and operation (EN50126, 2002), (EN50129, 2007), (EN50128, 2011).



Figure 3: Rail traffic control system life cycle “V” - model



Source: own preparation based on (EN50129, 2007)

System reliability evaluation is not only an essential element of ensuring safety, but is also helpful in estimating the costs of its operating. Reliability costs include, for example interim review, maintenance, modernisation or upgrading the skills of staff costs.

In most studies on this issue, systems failure losses are treated as a determined amount which includes the cost of downtime and the cost of repairs. In fact, there are also losses that are a direct consequence of system failures, such as the loss of expected benefits or costs of the necessary changes in traffic organisation. It is even more difficult to estimate the effects of loss of company reputation and prestige. The dependencies between reliability and economic effects are therefore not easy to identify (Lukasik et al., 2016; Bester & Torun, 2014), but even a rough estimation of them gives some possibilities for comparing the efficiency of objects with different reliability. (Strauss et al., 2015).

### 3.3 System modelling

The LCC model is a simplified representation of reality and defines only that components and properties, which are significant in analysis. The model should be clear and easy to use, update and modify. It should also provide the possibility of a separate analysis of the individual components. (EN60300-3-3, 2017) Developing the LCC cost model includes: cost breakdown structure (CBS) designing and product breakdown structure (PBS) designing, as well as identifying and estimating costs elements and parameters. (Caetano & Teixeira, 2016)

The definition of the costs included in the model and determination the method of its estimation is the basis for the construction of the correct LCC model. The selection of the methods depends on the specific object of research.

CBS is decomposing top-level costs into component costs. In accordance with the EN-60300-3-3 standard, each category should be divided until achieving the lowest level containing cost elements. The value of the element is expressed by the function, its parameters and/or constant values, according to the type of cost. One of the ways of the cost calculation is the use of three-dimensional matrix (EN60300-3-3, 2017; Kawauchi & Rausand, 1999), which dimensions are: product breakdown structure, life cycle phases and cost categories.

Such type of approach is systematized and well-organized, and thus provides a high level of trustfulness that all elements significant in the total LCC cost have been taken into account. Specialized tools can also be used to perform LCC costing. (Castlo et al., 2014)

### 3.4 Analysis evaluation and update

In order to confirm the accuracy and consistency of the results, the analysis review is made (EN60300-3-3, 2017). It includes: validation of objectives and scope of the analysis, verification of the analysis assumptions and their documentation, verification of the model, input data checking as well as results consistency and their interpretation. If deficiencies are found, it is necessary to modify and improve the original concept.

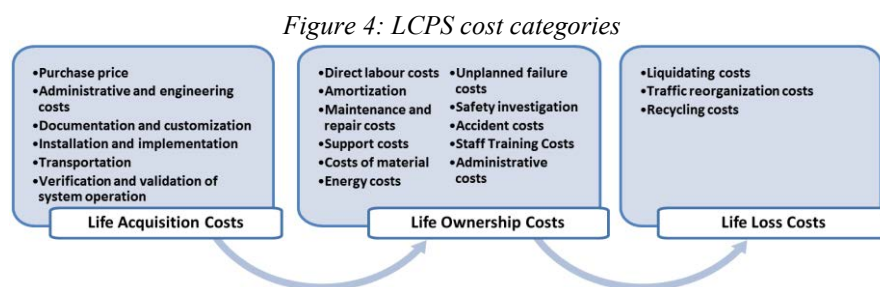
Estimation the LCPS life cycle costs require a broad spectrum of acquired data. Especially for new systems, historical data, such as reliability or maintainability, which for the purposes of analysis need to be estimated and expressed in terms of costs, are not initially available. In such cases, it is recommended to update the analysis using real data when it becomes available. (Kawauchi & Rausand, 1999)

### 3.5 Results reporting

According to international standard EN 60300-3-3, documentation of LCC analysis is mandatory. It is recommended to report clearly the results of the analysis as well as their implications. The standard specifies the elements of the LCC calculation report.

### 3.6 Sample LCPS life cycle costs structure

The authors used a simplified LCC analysis method to estimate LCPS life cycle costs. The cost categories included in the system analysis and their location in the system life cycle are shown in Figure 4.

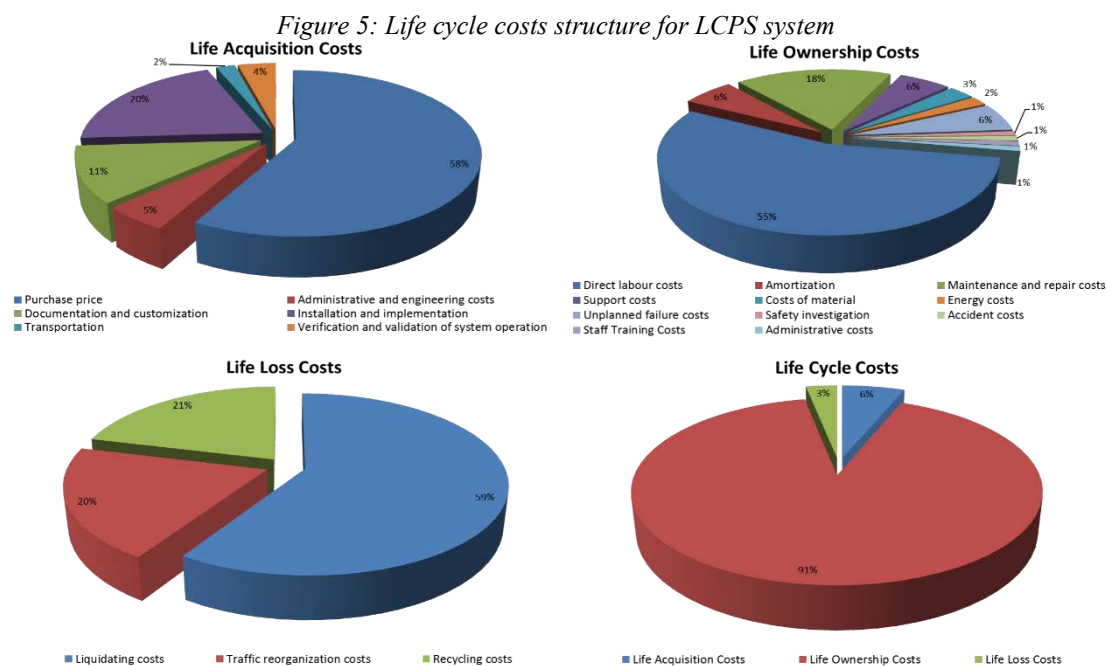


Source: own preparation

For the purposes of the analysis, the minimum for railway traffic control systems lifetime  $T=15$  years was assumed. The cost structure of the LCPS system is shown in Figure 5.

## 4. Conclusion

Not only the initial cost but also the expected costs of the operation and maintenance throughout the whole product life cycle have an impact for investment decisions regarding the construction or modernization of railway traffic control systems. Initial investment decisions affect the later stages of the facility's operation. LCC analysis can be successfully applied to assess the effectiveness of individual upgrades or individual systems.



Source: own preparation

It provides clear and probable, expressed in costs information on the consequences of the adopted concepts. Reliable information on the design and maintenance cycle leads to improved quality and availability of built systems, while increasing transparency in decision making. The effectiveness of the method depends not only on the assumptions and model correctness, but also on the availability of technical expertise and the data necessary to estimate the component costs. In contrast to other economic cost-effectiveness evaluation methods, LCC analysis takes into account the reliability features of the traffic control systems.

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## ICT'S READINESS TRENDS WITHIN VISEGRAD COUNTRIES AND CHINA

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**Abstract.** Knowledge is now recognised as the driver of productivity and economic growth, leading to a new focus on the role of information, technology and learning in economic performance. OECD analysis is increasingly directed to understanding the dynamics of the knowledge-based economy and its relationship to traditional economics, as reflected in “new growth theory”. This is, in particular, a cultural change that is conditioned by massive changes in technology, digitization and the growth of global interconnection. In its formation, the trends in education, research, digitalization, innovation activities as well as in the impact on society are decisive. Even on a regional scale, it is advisable to focus on trend comparisons and search for ways to eliminate those disparities that are not directly related to the geographical and demographic features of the region. The paper deals with the qualitative and quantitative changes going on in the world economy and are reflected in also the approaches to silk road economic belt. Chinese foreign initiative, dubbed 16 + 1, is the development of relations between 16 CEE countries and China, respectively the development of relations between countries on a silk road. The analysis covers the period 2013-2016, which occurred in the Visegrad countries and China conditions, consolidation and development of the communications on the silk road economic belt. The main indicators for evaluation of trends include global innovation index and its subindices, networked readiness index as well as the indicators of readiness index related to the information and communication infrastructure.

**Keywords:** information and communication technology, readiness index, infrastructure, skills, affordability

**JEL Classification:** F63, O30, O57

### 1. Introduction

Declaring an interest in building a knowledge-based society represents one of the factors that fundamentally determine the nature and direction of the strategy, the overall orientation and behaviour of individual entities, businesses, or institutions. Under the knowledge society, we understand a society in which theoretical knowledge becomes a constitutive element of virtually all human activities, from designing new techniques and technologies to creating the meaning of one's own life. This is, in particular, a cultural change that is conditioned by massive changes in technology, digitalization and the growth of global interconnection. In its formation, the trends in education, research, digitalization, innovation activities as well as in the impact on society are decisive. These areas cannot be considered in isolation as they influence and condition each other. Even on a regional scale, it is advisable to focus on trend comparisons

and search for ways to eliminate those disparities that are not directly related to the geographical and demographic features of the region.

China's foreign initiative, dubbed 16 + 1, is the development of relations between 16 CEE countries and China, respectively the development of relations between countries on an ancient silk road. The qualitative and quantitative changes going on in the world economy become reflected in also the approaches to silk road economic belt. The traditional view on the silk road as a transport corridor needs to be complemented by new communications especially through information and communication technologies (further ICT) as well as the economic and financial relations. The Chinese belt and road initiative is a large project that includes land and maritime parts of silk road economic belt. The target is to improve cooperation between macro-regions that is based on the better connectivity among countries. In the following sections, therefore, we are just looking at comparing the readiness of the Visegrad countries (e.g. Czech Republic CZ, Hungary H, Poland PL, Slovak Republic SK) and China in the field of connectivity of ICT silk road. The comparison is based on several indices and sources.

## **2. Theoretical background**

The ICT implementation and advanced networked based services are connected with global changing processes in the world of economy, labour as well as in the life-style. In both market segments - private and business customers - the crucial role has social support, promotion and enlighten orientated on new labour style or life and on adoption of new technology and new services/applications as well as the build a modern infrastructure. (Ristvej, 2011)

The ICT introduction, their integration to the industry, administration, society, and their development lead to the redefining of market structure and assortment of products/services/applications. At the present time the process of adoption new services is both technological and economical problem and social-psychological problem. Prahalad & Krishnan (2008) describe the ongoing fundamental transformation of business in relation on the factors of competitiveness, networking, knowledge, innovations and research and development drivers. Digital technologies are rapidly changing business practices and companies, institutions or processes not only in the national level but also in the global level. They are now an integral part of the economy, part of key innovations, but also the essence and carrier of the great economic paradoxes of our time.

Now, we are discussing about the concept of knowledge economy, knowledge triangle and the relations among some indicators related to the competitiveness and preparedness for business relations among Visegrad countries as a part of CEE countries and China as two points or areas at the silk road economic belt. Rothwell (2007), Cooper (2009), Greenhalgh (2010) deals with the need for improving the impact of investments in the education, research and innovation by systemic and continuous interaction. They have impact on growth, competitiveness and sustainability. The role of business factors in triangle are discussed by Krizanová (2015) and Jankalová (2013). Madudová et al. (2014) mention about creative aspects impacts on transfer knowledge. Buno et al. (2015) identify the negative phenomena in transition countries that influences the performance, competitiveness and innovativeness of economy. Klietík & Dengov (2015) are focused on the quantitative aspects of processes.

Milenković et al. (2016) say the definition of the networked readiness index as the degree of ICT implementation in a country's economy with the aim of increasing its competitive advantage. In particular, the networked readiness index provides a thorough overview of the top-ranked countries with a highly developed information and communication infrastructure

Maciulienė & Skarzauskienė (2016). For the progress measuring of digital economy and society European countries use DESI index (DESI 2017) that has 3-layer structure and by Vidruska (2016) is possible to compare the country performance of digital economy or the changes of educational processes as the basis for skills increasing by Vitenko et al. (2016). This contribution compares the conditions for efficiency relations among Visegrad countries and China at the silk road and for their improvement as the basis for development of economic belt. In order to produce the right conditions for new quality of communication belt few questions must be answered. How the relation should be outputted in order to get good quality results? What the countries need and consider for trade or business activities around the silk road economic belt? And why it is important for economy?

### 3. Data and methodology

The innovativeness and performance of country economy quantify global innovativeness index. (OECD, 2013, 2016) For the comparison of different countries conditions related to conditions, consolidation and development of the ICT readiness on the silk road economic belt it is necessary to include more characteristics or features. So, the research question: is it possible use the concept of global innovativeness index for investigation of conditions at the silk road economic belt? Have we identified another indices? Can we use networked readiness index and compare the tendencies by different sources?

We decided to investigate the conditions in Visegrad countries and China on the databases of three general indices e.g. global innovativeness index, networked readiness index and digital economy and society index. The global innovativeness index (further GII) on the input and output sides represent of 81 individual indicators (OECD, 2015). The networked readiness index (further NRI) represents 4 subindexes, 10 pillars and 53 individual indicators. For the comparison the most important indicators are related with the ICT infrastructure, skills, and expenditures to the research and innovations as well as to education. DESI index is possible to divide to 5 principal dimensions, 12 sub-divisions and 31 individual indicators. In our contribution we compare the Visegrad countries which were previously referred to as transition economies and are members of the EU since 2004 and China. Visegrad countries e.g. Czech Republic, Hungary, Poland, Slovakia represent important regional entity in the concept of 16+1. The individual data related to the competitiveness and innovation in countries is based on the OECD statistics and on the World economic forum statistics.

### 4. Comparison

The initial data for Visegrad countries and China contain table 1 that indicate the value of global innovation index and ranks of these countries by OECD statistics. Visegrad countries are included to the high income countries and China to upper-middle countries. China among the upper-middle countries is the first by innovation index in 2016 but in 2013 was only third in this category. The increasing of GII between 2013 and 2016 by the absolute values as well as by the ranking are identified in four countries, only Hungary has fallen. China recorded the largest increase. The largest increase is recorded for China (shift up from 35<sup>th</sup> rank on the 22<sup>nd</sup> rank) and for Poland (shift up from 49<sup>th</sup> rank on the 38<sup>th</sup> rank) in the GII ranking.

Table 1: Differences in Global Innovation Index in Visegrad countries and China between 2016 and 2013

Country	2013		2016		Difference	
	value	rank	Value	rank	value	rank
CZ	48,4	28	51	24	2,6	4

Hungary	46,9	31	41,7	39	-5,2	-8
Poland	40,1	49	42	38	1,9	11
SK	42,2	36	43,4	34	1,2	2
China	44,7	35	52,5	22	7,8	13

Source: OECD 2013, (2016).

Table 2: Heat map of NRI for Visegrad economies in comparison with China in 2016 and in 2013

Networked Readiness Subindex 2016	China	CZ	Hungary	Poland	SK
A. Environment subindex	3,9	4,5	4,2	4,2	4,1
B. Readiness subindex	4,7	5,9	5,0	5,8	5,0
C. Usage subindex	4,1	4,5	4,2	4,2	4,4
D. Impact subindex	4,2	4,1	4,0	3,8	4,1
Networked Readiness Subindex 2013	China	CZ	Hungary	Poland	SR
A. Environment subindex	3,9	4,2	4,2	4,1	4,0
B. Readiness subindex	4,8	5,0	4,9	5,3	4,1
C. Usage subindex	3,8	4,4	4,1	4,0	4,0
D. Impact subindex	3,7	4,0	4,0	3,4	3,7

Source: www.weforum.org/gitr

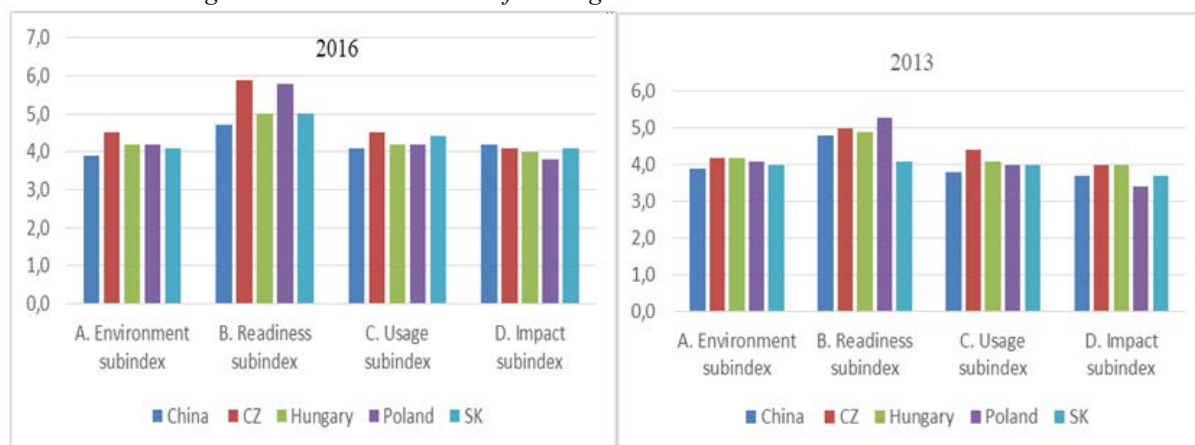
Table 3: Heat map of differences of NRI for Visegrad economies in comparison with China in 2016-2013

Networked Readiness Subindex	China	CZ	Hungary	Poland	SK
A. Environment subindex	0,0	0,3	0,0	0,1	0,1
B. Readiness subindex	-0,1	0,9	0,1	0,5	0,9
C. Usage subindex	0,3	0,1	0,1	0,2	0,4
D. Impact subindex	0,5	0,1	0,0	0,4	0,4

Source: www.weforum.org/gitr

When comparing and assessing the preparedness of countries in the field of ICT silk road it is possible to rely on the NRI index and its components. By the table 2 in 2013 and 2016, the highest levels were achieved in the readiness subindex in all countries and it is therefore possible to state that good starting conditions are created from the point of view of infrastructure preparedness and digital content, affordability and skills. The affordability increases mainly in the Slovak Republic, Czech Republic and Poland but decreases in China and Hungary. The positive trend is in the development of skills that are necessary for digital silk road. By the heat maps (Tab. 4 and 5) the main problems of readiness subindex in two countries are influenced mainly by the level of affordability (China and Hungary) and by infrastructure and digital content also in two countries (China and Slovak Republic).

Figure 1: Readiness subindex for Visegrad economies and China in 2016 and 2013



Source: Own by GITR 2013, (2016).



Table 4: Heat map of Readiness subindex for Visegrad economies in comparison with China in 2016 and 2013

Indicators of Readiness Index - 2016	China	CZ	Hungary	Poland	SK
Infrastructure and digital content	3,3	6,3	4,8	5,3	4,2
Affordability	5,5	5,8	5,0	6,6	5,8
Skills	5,4	5,5	5,3	5,5	5,0
Indicators of Readiness Index - 2013	China	CZ	Hungary	Poland	SK
Infrastructure and digital content	3,5	5,9	4,3	5,0	4,3
Affordability	5,8	4,0	5,1	5,6	3,3
Skills	5,0	5,1	5,2	5,2	4,8

Source: [www.weforum.org/gitr](http://www.weforum.org/gitr)

Table 5: Heat map of differences of NRI for Visegrad economies in comparison with China in 2016-2013

	China	CZ	Hungary	Poland	SK
Infrastructure and digital content	-0,2	0,4	0,5	0,3	-0,1
Affordability	-0,3	1,8	-0,1	1,0	2,5
Skills	0,4	0,4	0,1	0,3	0,2

Source: [www.weforum.org/gitr](http://www.weforum.org/gitr)

The level and the tendencies of differences of NRI in the Visegrad countries and China are determined by the level of ICT as well as the level of human capital and research. Both these characteristics are very important for networked readiness. From 2013 to 2017 only China and Poland increased the values of ICT in GII as the important input for development of digital silk road economic belt. The growth of value of human capital and research indicator as the input was recorded in the end only for China (Tab. 6).

Table 6: Differences in Global Innovation Index in Visegrad countries and China between 2017 and 2013

Country	ICT in GII				Difference		Human capital and research in GII				Difference	
	2013		2017				2013		2017			
	Value	rank	Value	rank	Value	rank	Value	rank	Value	rank	Value	rank
CZ	45,6	48	61	56	+15,4	-8	45,7	30	47,6	30	+1,9	0
Hungary	53,7	36	60,3	60	+6,6	-24	40,2	37	39,5	42	-0,7	-5
Poland	43,3	51	70,7	35	+27,4	<b>16</b>	37,6	45	36,5	48	-1,1	-3
SK	39,8	60	58,6	63	+18,8	-3	39,5	41	34,4	53	-5,1	-12
China	32,9	75	64,6	48	+31,7	<b>27</b>	40,6	36	49,2	25	+8,6	<b>11</b>

Source: OECD 2013, (2017).

The opportunities to improve the preparedness of Visegrad countries and China for the future digital silk route lies in development and supporting the linkages in the concept of knowledge triangle. The level of networked readiness index reflects the level of inputs e.g. the expenditures on the education, research and development, the level of e-participation, and generally business processes sophistication.

## 5. Conclusion

The changes in society and technology related to the digitalization processes in all areas of society live lead to the new position of data, information and knowledge as the most important factor for competitiveness and performance of economy, industries and business subjects.

The analysis of several indices, e.g. GII, its sub-indices, NRI and individual indicators provides better understanding of the relations between the innovation inputs and. On the basis of analysis of Visegrad countries and China GII it is possible to show the importance of the level of ICT, business sophistication and e-participation on the input side for better

connectivity. This is also the challenge of optimizing the transport and communication systems and business processes. The key challenge is developing skills for networked readiness by the supporting education and training systems. The target is connected with the equipment more people with the skills related to new business models and platforms. From the comparison and analyses the certain implications result for the Visegrad countries and China in relation to communication infrastructure along silk road as an important production conditions of the future. According to supported research and development topics e.g. smart specialization, and math and science education the outputs aimed to relevant industries influence the choice of form and changes in global value chain, in transport, logistics and communication flows, in foreign direct investment and focusing on clients. The Visegrad countries have to concentrate on the education policy, mainly support the science, technology, engineering and mathematics education competences and on the efficient tools to achieve the goals. China has a relatively low share of researchers in relation with the research and development power or expenditures from GDP. But the trend of research and development spending as a percentage of GDP is growing and is plan for 2020 on the 2.5%. The situation in Visegrad countries is different. The research and development spending are lower thus not creating sufficient conditions for anticipated technological changes.

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# STRUCTURAL PATHOLOGIES IN INTER-ORGANIZATIONAL NETWORKS: ANALYSIS OF THE POSITION IN THE NETWORK, NETWORK DENSITY AND LINKS IN THE NETWORK

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**Abstract.** The phenomenon of inter-organizational cooperation is becoming increasingly important in the global business environment. However, any cooperation between companies, regardless of its form, is associated with the probability of certain negative phenomena. These phenomena, called pathologies, can reduce the attractiveness of this form of activity. The aim of this paper is to present the essence of structural pathologies in inter-organizational networks and to highlight the key areas of pathological destruction. The problem seems to be significant because of its importance to the success of the network and the companies of which it is comprised, and to the insatiable attention of researchers devoted to this topic. At the same time, inter-organizational networks are increasingly being identified as a kind of antidote for all business troubles, both from the turbulence of the environment and from the internal factors of the organization. A broad analysis of the existing literature was used as the main research method in this paper. This analysis allows us to state that, among the most frequent structural pathologies in inter-organizational networks, the most important ones are: 1) the position of the companies in the network, 2) network density, and 3) the nature of the links in the network.

**Keywords:** structural pathologies, inter-organizational networks, network density, network structure

**JEL Classification:** D85, L14, 030

## 1. Introduction

The development of research on multilateral relations (especially in economic and organizational terms) dates back to the middle of the twentieth century, with particular intensity in the last thirty years. This is primarily due to the increased importance of the cooperative relationships (including networks) to the success of the development of the companies. Networks have become a defensive response to the challenges posed by globalization-related phenomena and processes, in particular: 1) the intensification of competition, 2) the brutality of rivals' behavior (both direct and indirect), 3) the technological race and 3) the need to operate on the markets of multiple countries with varying levels of risk and investment attractiveness.

Most researchers focus on the essence of network creation and enterprise competitiveness resulting from functioning in multilateral system operations (Jarillo, 1998; Gulati, 1999; Wassmer & Dussage, 2011; Michaelides et al., 2013), highlighting the benefits of networking. In recent years, however, there have also been studies that increasingly address the issues of

phenomena and processes that inhibit the generation of these benefits. (Vrgovic et al., 2012; Leick, 2011; Sroka & Cygler, 2014) Economic practice indicates (especially observing the behavior of companies in the pharmaceutical, aerospace, ICT and biotechnology sectors) that structural abnormalities are particularly dangerous, which in turn results in the pathologizing of the inter-organizational relationships of network members. The danger of structural pathology is evidenced by both the magnitude and the variety of these threats, which result in consequences both for individual companies and the system as a whole. When analyzing structural pathologies in inter-organizational networks, the most important ones are: 1) the position of the companies in the network, 2) network density, and 3) the nature of links in the network. Given these facts, the aim of this paper is to present the essence of structural pathologies in inter-organizational networks and to highlight key areas of pathological destruction. The problem seems to be significant because of its importance to the success of the network and the companies of which it is comprised, and to the insatiable attention of researchers devoted to structural pathologies in inter-organizational networks.

## **2. Pathologies in networks**

Pathologies in inter-organizational networks may arise in different areas of the constellation; however, those of structural nature are probably the most significant. (Cygler & Sroka, 2014) They generate major conflicts within the system and numerous benefits from the functioning of the network erode through them. They are, therefore, a significant threat to the success of the network. In addition, it is relatively easy to observe structural pathologies and diagnose their field of destruction. Pathologies in inter-organizational networks are also dangerous due to the fact that they cause a chain reaction through the appearance of irregularities. This means that some pathologies may bring about the occurrence of others. Thus, structural pathologies may cause certain dangers, both directly and indirectly. To the most important structural pathologies in inter-organizational networks may be allocated those related to the position of the companies in the network, network density and the nature of links in the network.

### **2.1 Pathologies associated with position in the network**

One of the key structural pathologies relates to the position of the company in the network structure. Zaheer & Bell (2005) claim that the resources possessed by the network members (i.e. their quality and relevance) should decide the position in the structure of the network. The more valuable the resources possessed by the company (in particular intangible assets), the more favorable its position in the network. In turn, Gnyawali et al. (2006) emphasize the importance of multiplicity of partnerships which were formed by individual companies. In their view, it is also important who the partners were. This relates mostly to the relationships with the key companies in the network, with valuable tangible and intangible assets. The privileged position in the network is combined with the reception of specific (and greater) benefits, which allows for the better use of development opportunities. A favorable position in the network promotes the implementation of standards imposed by the key companies, which can also benefit faster and better from the transfer of information and knowledge, as they are directly linked to the other key companies (a source of knowledge and information). A privileged position in the network also promotes the growth of creativity and innovation of the key companies in the network. (Galunic & Rodan, 1998) Thus, companies are more competitive against non-members of the network, which is reflected in their financial results.

Practice shows that an informal network of social relationships appears within the network along with formal links. Social networks have an integrative nature and support (promote)

business relationships between companies. Trust between the member companies grows and there is also a growing tendency towards cooperation. In healthy inter-organizational networks, formal (economic) relationships have a higher strength of impact than informal (social) ones. Pathology occurs in the network if the interpersonal relationships dominate the business ones. There are situations in which the economic success of the company is determined by interpersonal relationships, and not its achievements. An example is a common phenomenon in Russia, known as the *blat* (Ledeneva, 2009), which is based on an informal exchange of favors which allow those in question to achieve their intended personal and business goals. (Oleinik, 2004) These solutions apply to different spheres of life and involve different representatives, such as the government, army, police, health service, or politics. The more links within the *blat*, the better one can avoid formal procedures and gain a better position in society and business (and thus in the network). The actions of people with a wide *blat* often go unpunished. This phenomenon is viewed differently, e.g. from the Western viewpoint it is seen as some kind of corruption.

If informal structures have a greater impact than formal ones, certain anomalies and threats may appear within the network. The centralization and anarchy of decisions and actions taken in the network is enhanced. This causes the polarity of the network members and the establishment of two camps: sharks and roaches. Sharks are companies which achieve significant benefits (including through social connections and the exchange of pleasantries), and dictate the rules of the game in the network. Their willingness to share knowledge and information with others decreases, because correlation becomes weaker, and the effects of activities increasingly depend on multilateral cooperation within the network as a whole. In turn, roaches are companies which do not play a greater role in the network structure. They give more than they take, and the scale of their discontent increases. They need to adapt to the rules of actions as defined by the sharks. There is then a considerable disproportion in the distribution of benefits from the activities of the network. This also results from the interference of transfer of knowledge and information. Trust in business partners decreases, conflict appears and opportunistic behavior intensifies accordingly. The danger of competition between members of the network increases, and retaliation to these actions is highly aggressive. (Chen, 1996) However, the privileged position of the sharks means that the actions of roaches (both proactive and reactive) are moderated, which further enhances the feeling of frustration and helplessness of the latter. Limited trust also brings about the increased need for control of intra-network transactions, which generates additional transaction costs for the entire system. At the same time, the benefits which are the result of network specialization erode. General animosity requires additional collateral and assurance.

## 2.2 Structural pathologies resulting from network density

Besides the risks associated with the pathologies of position in the network structure, there are threats resulting from the density of the network, which determines the number of links in the system, allowing direct contact between the partners. The problem of network density is extremely complex due to the fact that pathologies arise both in overly dense networks as well as those which are too delaminated, with a number of structural holes. These pathologies are therefore intermittent.

A dense network allows for the faster transfer of information and knowledge between its members. The numerous links also allow for the flow of expertise related to the acquisition, transfer and utilization of information. In addition, the more reciprocal links, the higher the quality of information transferred (directly from the source). Trust between companies and the

propensity to share assets (both tangible and intangible) increases. Companies involved in a dense network are more active in the creation and transfer of knowledge. (Uzzi, 1997). In addition, the relationships in a dense network allow for the joint development of standards of behavior and for the faster sanctioning of any deviations from these standards. (Burt, 2000) It then strengthens the reputation of the entire network.

The limitation of the autonomy of partners is another feature of a dense network. Structural autonomy occurs if there are structural holes in the network. Burt (1992) pointed out that if a company is linked to others which do not have direct contact with each other (there is a structural hole), it has structural autonomy. It then controls their partners and the resources that flow in the framework of direct connections. Companies with more structural autonomy were more competitive than those characterized by lower structural autonomy. (Gnyawali & Madhanavan, 2001)

On the other hand, overly loose networks cause a considerable lengthening (in terms of both time and trajectory) of knowledge and information transfers and the distortion thereof. (Kenis & Knoke, 2002) Limited access to information polarizes network members, and favored groups of companies (sharks) and subordinate organizations (roaches) appear. At the same time, it is very difficult to establish the basic norms of behavior in the network, and opportunistic behavior is becoming increasingly common. In "open" networks, there is a growing risk of competition. In addition, through the existence of multiple structural holes and the reduction of knowledge and information transfer, the innovativeness and competitiveness of companies are also reduced. (Ahuja, 2000) Therefore, transaction costs also rise.

### **2.3 Pathologies in the network and the nature of links between its members**

Another area associated with the possibility of structural pathology in the network is the nature of the links between its members, which can be both strong and weak. These relationships affect the relational rooting of the network. (Hite, 2005) The nature and strength of these relationships affect the potential of the network. However, the strength of the links should be distinguished from the strength of the network. (Jack, 2005) A strong network may be created by both strong and weak links. At the same time, both strong and weak ties may weaken the network, especially when they are created and used in the wrong way (they create pathology). It should be noted that the same links can contribute to generating significant benefits and lead to a pathological situation, becoming a development barrier for the parties. Therefore, the risks associated with the characteristics of the links between organizations in network structures should be analyzed in context.

Granovetter (1973) pointed out that the categorization of links into strong and weak is a function of several variables: the commitment of the parties, the number of interactions (including reciprocity) and trust (friendship). Strong links require higher commitment (time, emotion, frequency of mutual contacts) from the parties, and increased interdependence. The "closeness" of contacts between members of the system determines the strength of the links. Strong ties are more frequently formal rather than informal (Grabher & Stark, 1997), and often have involve a form of equity. (Kenis & Knoke, 2002; Capaldo, 2007) Strong links bring about an increase in the compatibility of the parties involved. In addition, these ties favor the implementation of more discipline, which means that any offense within the network is properly sanctioned. Therefore, companies are less inclined to behave opportunistically. Strong ties also reduce the conflicts between parties due to the frequency of contacts. (Nelson, 1989) Thus, networks which have strong decision-making centers, and strong ties with each other, are characterized by a lower inclination towards conflict than structures created as a result of weak

links. However, a system of strong ties can excessively stiffen the network and bring about the loss of flexibility therein, which is highly important in creating a competitive advantage for the system and its members.

In turn, weak links take a very loose form and have sporadic interactions. They mostly take the form of informal contacts, although this factor is not considered necessary. There are weak links in the network which are of a formal nature, but they take the form of non-equity links. (Kenis & Knoke, 2002) Networks based on weak ties allow for greater freedom in the actions of the companies involved, but they are also exposed to much larger conflicts. Weak ties are utilized for the transfer of simple knowledge. The loose nature of these relationships means that the transfer of complex knowledge is not as effective as in the case of strong links. (Bergenholtz, 2011) However, networks based on weak ties are characterized by greater flexibility, and are also cheaper to maintain. Due to the much lower frequency of contacts than in the case of strong ties, companies provide each other with non-redundant knowledge (Hansen, 1999). This also has a specific nature and relates to particular projects. The members of networks with weak links have to demonstrate a significant level of independence. The knowledge transferred within these chains has an aggregated nature, requiring additional individual interpretation and application by users.

The choice of the type of links in the network depends on its specifics. Strong links are preferred in networks in which complex knowledge is transferred (including non-codified or tacit knowledge). Research by Jack (2005) has shown the existence of preferences to create strong, rather than weak, links in the network, resulting mainly from the features and benefits generated by such a link. Strong links will be selected if the networks operate in a highly turbulent environment, and will also dominate in networks in which the relationships relate to competitive companies. Strong ties are the foundation of the relationships between the parties in cooperative networks. In most cases, the choice of weak links becomes an incentive for opportunistic behavior, as well as economic espionage, and consequently leads to an imbalance in the cooperative system and the erosion of the benefits of cooperation. In turn, weak links will be selected when the relationships in the network include companies and their suppliers or customers. (Mahmood et al., 2011)

The size of the companies in the network also affects the choice of links. Large companies prefer strong ties, due to the belief that only strong relationships are able to harness the competitive and expansionist aspirations of partners. Smaller companies in the network often use weak links. (Chen & Hwang, 2008) The choice of weak ties stems from the desire and the ability of smaller organizations to maintain organizational autonomy.

It should be noted that the choice of links in the network is subject to both external and internal factors, which change over time. If we take into account the external factors, the characteristics of the network environment is analyzed. In turn, in the case of internal factors, the situation between the members of the system, as well as the specificity of individual companies, is analyzed. Therefore, the choice of appropriate links between the companies in the network is complex and burdened with a high risk of failure. The inadequate choice of links, instead of generating benefits, limits them or even threatens the growth of members of the network, and in extreme cases, even their very existence.

### 3. Conclusion

The analysis presented clearly demonstrates the diversity and strength of the threats generated to inter-organizational networks and its members. These pathologies threaten the



development of network structures, both directly and indirectly, which means that the strong are even more powerful, but at the expense of the weaker ones, who lose relevance as a result.

Network connections facilitate not only the transfer of resources (material and non-material) but also the proliferation of pathological situations. An abnormality created in one part of the system quickly attacks another part. Therefore, any lack of appropriate remedies will lead to ever more pathologies. Any delay in anti-crisis actions increases the transaction costs of network renewal and the need for more radical actions. In the mature stages of network pathology, surgical cuts seem necessary, whereas pre-emptive actions are effective in the initial stages of negative phenomena and processes.

One may even state that, in inter-organizational networks, pathologies can form a network of pathologies, both in terms of their area of action (all or part of the network) and the variety of pathological phenomena.

The multiplicity and power of havoc caused by structural pathologies in inter-organizational networks testify to their consequences. Structural pathologies have a negative impact on the conditions of the companies, intra-organizational networks, and networks as a whole. Taking into account the magnitude of the consequences of the emergence of structural pathologies in inter-organizational networks, it is important to note that they threaten not only the development of the network and its members, but its very existence. As a result of structural pathologies, the benefits associated with network activity are highly eroded. Networks that are characterized by the spread of structural pathological phenomena make the activity of these systems susceptible to very high risks, which results in an increase in transaction costs. In addition, in networks with structural pathologies, there is an increased tendency towards opportunistic behavior and a reluctance to reciprocate the existing, and create new, intangible assets. As a consequence, both companies and network systems lose innovation (which may even cause recession), and consequently the ability to create competitive advantages. Inter-organizational networks with pathological developments become a trap for companies operating within. Due to the division of enterprises into sharks (stronger, privileged) and roaches (weaker), the latter lose their organizational independence as a result of structural pathologies. The roaches cover the costs of network operation, and are dependent on the stronger companies, including for exit decisions. Thus, the network represents a loss for them, rather than an advantage.

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# THE SIGNIFICANCE OF FDI FOR MEASURING THE DEGREE OF GLOBALIZATION OF THE NATIONAL ECONOMIES OF THE VISEGRAD GROUP COUNTRIES IN COMPARISON WITH THE EU-28

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**Abstract.** Foreign direct investment is a crucial element in the globalization process in the world economy. FDI is conducive to technology transfer and constitutes a significant source of capital for host economies. Additionally, it contributes to job creation. Affecting the scale of connections between particular national economies and the world economy, FDI determines, to a significant extent, the degree of their globalization and makes an impact on trade volumes between particular countries. Hence, it contributes to the increased competitiveness of national economies. The significance of FDI in the globalization process is also connected with a substantial share in its flows of transnational corporations. The paper attempts to evaluate the degree of globalization measured with the share of the V4 group countries in the FDI international flows compared to the EU-28. The analysis uses the FDI share of particular actors in the world FDI flows. The FDI share in the GDP of particular countries, and the range of investment diversification by a country of origin and a host country. The analysis conducted as part of the study confirms a growing degree of globalization of the countries under examination as well as the differences in globalization levels that put the Visegrad Group countries at a disadvantage. In terms of FDI dispersion, similar trends can be observed in the EU-28 and the V-4. It was noted that a substantial percentage of investment (outward and inward) was concentrated in several countries, mostly EU member states. This points to the significance of integration within the EU for the investment decisions of its members.

**Keywords:** Foreign Direct Investment, globalization, Visegrad Group

**JEL Classification:** F150, F210, F230

## 1. Introduction

Nowadays, globalization is one of the characteristics that are used to describe the world economy the most frequently. (Tovarova, 2016; Boughton et al., 2017) There is no agreement as to when it was started and what event might have triggered it. This is partly because the definitions proposed by different authors do not explicitly delineate the scope of the concept. (Harvey, 1989; Giddens, 1990; Scholte, 1997; Gilpin, 2001) At the same time, however, globalization can be described with a few characteristic features, such as: abolishing national frontiers, the emergence and intensification of connections in all spheres of life, and the increased range, intensity and interaction between the players in global economy. (Czech, 2016) Neither is the process of globalization assessed in a clear and straightforward manner, while the

discussion concerning its nature and implications continuous. (Hirst et al., 2009) The proponents concentrate on the benefits stemming from the free flow of information, communication opportunities, and chances offered by the global market. The opponents underline the threats involved in globalization and emphasize that its main beneficiaries are the most developed countries, which causes further social and economic stratification. (Castells, 2010)

Foreign direct investment (FDI) as a form of connections between the actors in the global economy is considered one of the benefits resulting from globalization. This is because it has grown more significantly than international trade, but also due to its role in facilitating technology transfer, industry restructuring and the growth of global firms. FDI, however, is also perceived as a risk stemming from the involvement of transnational companies the operations of which may pose a threat to domestic entities in certain industries. Additionally, the variability in the presence of the factors attracting FDI contributes to international imbalance, particularly with respect to developing countries.

The article aims is an attempt to assess the degree of globalization– measured with the share in FDI international flows – of the Visegrad Group countries compared to the EU-28.

The primary hypothesis is that the degree of globalization in the EU-28 economies as a whole measured with FDI flows is considerably higher than in the V-4 countries. The study uses the data concerning FDI published by the UNCTAD and the IMF.

## **2. Literature review**

The importance of FDI for national economies has been and remains widely studied in literature. (Hymer, 1976; Lucas, 1993; Jun & Sigh, 1996; Dunning, 2009; Dunning, 2015) This is due to the fact that FDI is considered one of the strongest impulses stimulating an economy through driving demand in consumption and investment as well as by improving the productivity of firms. First of all, however, FDI tends to be the carrier of new – usually more efficient – technologies and is often conducive to innovation-driven changes in corporate culture. Undoubtedly, the position of a given economy in global FDI flows determines its position in the global economy. FDI is often seen as an alternative to international trade in goods, which is a primary form of connections between countries.

Simultaneously, numerous studies are conducted to identify the factors determining the directions of capital flows in the form of FDI and the ways to optimize benefits both on the side of the countries where capital originates in and the countries and regions which are FDI targets. (Asiedu, 2002; Chisagin, 2015; Rashid et al., 2016)

## **3. FDI as a percentage of GDP and the FDI balance as the globalization measures of national economies**

OECD proposes to use FDI for measuring globalization in a number of ways, creating a long list of indicators. The examples are FDI as a percentage of GDP and the FDI balance on the level of an analyzed entity. (OECD, 2005)

One of the basic measures of globalization that is connected with FDI flows is FDI as a percentage of GDP. A considerable impact of FDI on GDP as a primary indicator of the economic situation determines the scale of globalization in a national economy.

The analysis of this measure for the selected group of countries confirms a considerable share of resources, both FDI outflows pursued by the EU-28 countries abroad and FDI inflows in these countries in relation to their GDP. In the case of the V-4 countries, on the other hand, the FDI inflows in relation to GDP are a few times as high as the FDI outflows. This is obviously connected with relatively low FDI outflows of these countries compared to their FDI inflows.

The differences between these values confirm the existence of the gap between the level of development in the Visegrad Group countries and the EU-28. These differences concern, first of all, the distance between the so-called “old” EU members and “new” EU members, which include the V-4 countries. It should also be noted that the EU-28 has a much higher level of globalization measured with the analyzed indicator than the entire world economy. This shows how strongly globalized the EU region is compared to the world economy when globalization is measured with FDI flows. In the V-4 countries, FDI as a percentage of GDP is higher than for the world economy only in the case of FDI inflows. It should be pointed out that in the analyzed period of time FDI as a percentage of GDP has grown dynamically for the two groups of countries under consideration, which means the degree of globalization in these countries has been increasing for the last 20 years and remains in line with the rising scale of globalization observed in the world economy over this time. At the same time, however, we need to account for the significant differences in FDI flows (outward and inward) in the EU-28 and V-4 against global FDI. Until 2016, 28% of global FDI flowed into the EU-28, while 34% of global FDI flowed out of the EU countries. Although these figures were even higher in the years 2000-2005, exceeding 50%, they started growing again in 2013 and since then their increase has been uninterrupted. On the other hand, until 2016 the accumulated value of FDI inflows in the V-4 countries amounted to only 1.6% of global FDI and 5.5% of FDI inflows in the EU countries. FDI outflows for the V-4 countries are of marginal value and in 2016 they amounted to 0.3% of global FDI outflows and 0.8% of FDI outflows in the EU-28.

The analysis of the FDI balance as a globalization measure confirms that the analyzed groups of countries differ in terms of FDI. Until 2016, the EU-28 had a significantly positive balance of FDI flows, whereas the Visegrad Group as a whole and its particular members reported a negative balance, which is illustrated with the data in Table 1. Accordingly, the level of globalization in the EU-28 countries is considerably higher.

Table 1: The FDI balance for the EU-28 and V-4 in 2016 in millions USD

countries/region	Stock outward	Stock inward	balance
UE-28	9 110 741	7 663 571	1 447 170
Czechia	18 644	115 204	-96 560
Hungary	25 029	77 721	-52 692
Poland	24 790	185 903	-161 113
Slovakia	2 651	41 615	-38 964
V-4	71 114	420 443	-349 329

Source: Based on UNCTAD data.

#### 4. Dispersion of FDI inflows and outflows as a measure of globalization in national economies

When globalization is seen as conducive to the integration of the markets of particular countries and the intensification of economic flows between these countries, an important

element in measuring the level of globalization is the dispersion of flows affecting particular countries. This concerns trade in goods and services, but also, or perhaps even to a larger extent, FDI flows. The scale of connections between national economies in terms of FDI flows determines the scope of the internationalization of their entities. The number of markets in which FDI flows are pursued indicates the degree of their geographical dispersion and affects the measurement of globalization in particular national economies.

The analysis of the dispersion of inward and outward FDI stocks in the V-4 countries and in other EU countries shows the significance of bilateral, often historically rooted, connections, for example Denmark-Finland-Sweden, Lithuania-Latvia-Estonia, Czechia-Slovakia, Croatia-Bosnia and Herzegovina, Belgium-Luxemburg, or USA-UK. Another important factor involves special rules for foreign capital within tax havens or other privileged zones (Cyprus, Malta, Luxemburg). FDI inflows in these countries are often motivated by speculative purposes, but the scale of investment dispersion can be substantial there, which is confirmed by the data presented in Table 3.

The scale of investment dispersion measured with the share of particular countries in total FDI inflows and outflows varies. It is interesting that a large percentage of foreign direct investment concerns five countries, both as host countries and as countries of origin. The relevant figures are shown in Table 2. The comparative analysis of the EU-28 and the V-4 reveals that the FDI outflows of the V-4 are much more concentrated than the FDI outflows of the EU, which points to the higher level of globalization of the EU countries compared to the Visegrad Group. At the same time, it should be noted that other EU countries are important for the V-4 both as host countries for their FDI outflows and as countries of origin for their FDI inflows. This is certainly connected with advanced integration processes and the consequences of the single market, within which the freedom of capital movement determines the stream of their mutual flows, limiting the dispersion of investment and the degree of globalization.

Table 2: The share of the 5 most important partners in total FDI inflows and outflows of the EU-28 countries in 2015 (%)

Country	Outward FDI	Inward FDI	Country	Outward FDI	Inward FDI
Austria	24	48	Ireland	83	87
Belgium	75	99	Latvia	59	52
Bulgaria	no data	45	Lithuania	61	56
Croatia	87	60	Luxemburg	73	69
Cyprus	25	28	Malta	0.5	1.7
Czechia	71	67	Netherlands	48	61
Estonia	75	66	Poland	81	62
Denmark	51	66	Portugal	74	79
Finland	72	84	Romania	no data	65
France	55	65	Slovakia	68	63
Germany	43	68	Slovenia	66	68
Greece	66	80	Spain	52	64
Italy	43	77	Sweden	47	62
Hungary	70	57	UK	54	62
V-4 mean	72	62	UE-28 mean	58	63

Source: Based on IMF data

In the case of the V-4 countries, the degree of dispersion of FDI inflows and outflows varied from country to country in the analyzed period of time.

The analysis of the countries of origin for FDI inflows in the V-4 indicates that the 5 top investors were responsible for 57% of FDI in Hungary up to 67% in Czechia, which would point to its greatest concentration in Czechia and the largest dispersion in Hungary and, as a

result, the highest scale of globalization of the Hungarian economy. It should also be noted that in the years 2001-2015 Poland experienced the highest growth in the dispersion of FDI inflows (by 9 percentage points), while Slovakia saw the biggest fall. This proves the highest growth in globalization measured with FDI dispersion in the Polish economy. This is despite the fact, which has already been mentioned above, that FDI inflows in the V-4 countries are not significant and the scale of geographical dispersion of countries with FDI outflows from the V-4 is varied. The highest level of concentration characterizes investors from Czechia, the lowest – from Poland. In the case of FDI outflows, the degree of globalization in the Czech economy is the lowest compared to other V-4 members.

In addition to the determinants stemming from advanced regional integration processes conducive to FDI flows within the analyzed group of countries, another important factor affecting FDI concentration is investor attractiveness defined as capacity for attracting FDI and constituting a crucial component of an investment climate that can be considered favorable to long-term investment strategies. (WB, 2016) A variety of factors that shape investor attractiveness offer an interesting proposition for further research. (Özkan & Günay, 2011) According to the definition created by the United Nations Economic Commission for Europe, the investment climate is made up of the entirety of investor-friendly conditions in a particular area. (UNECE 2004) In terms of FDI, investor attractiveness is often a decisive factor in the decision process concerning investment location. The level of investor attractiveness may become a factor encouraging investors to bring capital into a given country and, as a result, contribute to its increased globalization though a variety of investments implemented there, or discouraging them from a positive investment decision.

The analysis of the opinions concerning the investor attractiveness of particular regions shows that, in the years 2004-2008, the investor attractiveness of Central and Eastern Europe, including the V-4 countries, was higher than the investor attractiveness of Western Europe, including the EU-15. High levels of investor attractiveness in the V-4 countries was, paradoxically, related to their EU accession and it caused the decrease in the attractiveness of the remaining EU members, i.e. the EU-15. In the same period, there was a rapid growth in FDI inflows in the V-4 countries and, consequently, in the degree of their globalization measured with FDI inflows as a percentage of GDP, especially in 2004, when the growth rate concerning this measure reached 20% compared to 2000 for the entire V-4 group. There was also a significant rise in FDI outflows of the V-4 countries, uninterrupted from 2004 to 2012 (compare Tab. 1). In the years 2013-2017, on the other hand, Western Europe, the region relying on the EU-15 countries, enjoyed the highest investor attractiveness, contrary to the situation in Central and Eastern Europe, including the V-4 countries, where investor attractiveness was reported to fall. (E&Y, 2016; E&Y, 2017) High investor attractiveness contributes to investments being pursued in the EU member states in Western Europe, which translates into the higher degree of globalization achieved by their economies.

Investment decisions are also determined by the standing of a given national economy in different ratings. The rating of a given country is one of the ways to measure its economic situation, while at the same time it is an instrument sensitive to the economic and political developments in this country. It affects investor decisions by defining the credit worthiness of particular national economies. The analysis of the credit ratings for the EU-28 and the V-4 countries reveals no differences between them. The V-4 countries were not given the highest ratings, but neither did they end up with the lowest. (Expansion, 2016) The ratings of the V-4 countries are presented in Table 3. Accordingly, the credit rating should not be the factor deciding whether to make an investment in the EU-15 countries instead of the V-4 states.



Table 3: The credit ratings of the Visegrad Group countries in 2016 based on Moody's, S&P, and Fitch

Country	Moody's	S&P	Fitch
Czechia	A1	AA-	A+
Hungary	BAA3	BBB-	BBB-
Poland	A2	BBB+	A-
Slovakia	A2	A+	A+

Source: Based on Expansión, <http://countryeconomy.com/ratings>

## 5. Conclusion

The analysis of FDI as a measure of globalization in the EU-28 and the V-4 confirmed the initial hypothesis. It was observed that the degree of globalization in the V-4 economies grew steadily, which is manifested by FDI inflows and outflows as a growing percentage of GDP. The analysis of this indicator also confirms the higher level of globalization of the EU as a whole than the V-4 countries. On the other hand, the scale of the dispersion of investors bringing their capital to the analyzed groups of countries is similar, which points to their similar level of globalization. FDI outflows, however, tend to be much more disperse in geographical terms. Here, dispersion rates are higher in the EU-28 and this is the indication of its higher degree of globalization. Another interesting issue is a large proportion of investment pursued by the EU and V-4 members in other EU countries. The preferential treatment of investors under the principles of the single market, combined with the investor attractiveness of the EU-15 and the declarations of further investment in Western Europe, will definitely help maintain the current trend for the EU as a whole.

If we analyze the significance of FDI in globalizing particular economies, it is important to consider the scale of FDI inflows and outflows of all the EU member states and the V-4 countries, which are also part of the EU. The role of particular countries, however, varies. The EU-28 is an important player in international FDI flows mainly because of such countries as France, the Netherlands, Germany and the UK, which are both the most important EU investors and have the highest FDI inflows among the EU countries. Compared to theirs, the share of the V-4 is insignificant.

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## SOCIAL RESPONSIBILITY AND GLOBAL ENVIRONMENTAL PROTECTION AWARENESS AMONG STUDENTS – CASE STUDY

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**Abstract.** The article analyses current awareness of students about global environmental changes and perceptions of climate changes in our society. It aims to determine the attitude and level of awareness of the well-known facts concerning the global consuming way of life and the industry impacts on pollution and changes in nature among university students of management study program. It intends to analyse their social responsibility and attitude to become active in this field. Corporate social responsibility is a topic of growing academic and management interest, particularly regarding its impact on consumer behaviour and sustainability of contemporary way of life as consumers tend to employ a company's image in consumption decision making. Sustainable development is based on economic development, social equity, and environmental protection. So the abovementioned theme is directly related to ethics and corporate social responsibility. The results reveal the attitude of the students to these issues, and how they perceive the impact of the consuming way of life and industry on nature. Students who are studying management are being prepared for a job position to manage people, but, we think, they should also have the potential to behave responsibly in relation to the environment and the sustainability of the contemporary social way of life.

**Keywords:** social responsibility, environmental protection, social equity, sustainable development

**JEL Classification:** Q51, A13, A23

### 1. Introduction

The trade exists since first interactions of human communities which firstly bartered and later used money as the exchange medium. A liberal trade allows individuals to specialize in sectors in which they enjoy comparative advantage (Grossman & Krueger, 1991) if compared with their trading partner. Utilization of liberal trade allows maximizing collective assets and gains.

The development of information and communication technology is driving the globalization in several areas by creating connected networks across distances. In trade, networks of collaborating parties from the resource winning over selling to recycling were created by advancing logistic and transportation of goods. Resources extracted in one place are carried to far distant places for their processing and production of various good that are sold across the globe, reaching customers everywhere by exploiting transportation. The trade seeks lowest

possible costs to struggle in the environment of fierce and keen competition where customers hunt the best deal possible. The business world is mostly operating with focusing on maximizing economic gains and profit whereas the “real price” paid by the society and the environment is often not included in the monetary value expressed by numbers and currency. (Dávideková & Greguš, 2017) In this focus on monetary conditions, other aspects being disregarded especially the impact on nature and environment. Despite the existence of substitutional products of equal or only slightly higher price and the same or comparable quality, but with different places of supply, the local products are not preferred. Consumers overemphasize the attractiveness and appearance of the packaging. (Mullan & McDowell, 2003) The packaging industry produces attractive plastic covers for goods for the transportation and sale. The ubiquitous pollution spreads over land and water (Eriksen et al., 2014) threatening the animals and remaining in the environment for a very long time due to long decomposition time period.

The global trade network interconnected and enabled by transport and logistic significantly impacts congestion, safety and pollution. (Mačiulis et al., 2009) The burning of fossil fuel and unstoppable deforestation are the main drivers of the unceasingly rising level of carbon and CO<sub>2</sub> in the atmosphere in the past 55 years. (Baker et al., 2006)

Not only has the transport overland, but also the maritime traffic irreversibly impacted the natural environment by damaging endogenous eco systems globally. (Galgani et al., 2015; Ling et al., 2017). Marine debris denotes serious concern for the marine environment. (Eriksen et al., 2014) Severe long-term damages to endogenous animals, seagrass and coral reefs are correlated with ship routes in tropical waters. (Davenport & Davenport, 2006; Fossi et al., 2017) Juvenile oceanic animals are vulnerable to the increasing quantity of plastic debris in oceans. (Pham et al., 2017)

Besides the road and sea transport, the aviation is associated with the highest carbon pollution intensity (Corbett & Winebrake, 2007) by burning great volumes in turbine engines where the aircraft age is also the main determinant of environmental costs. (Grampella et al., 2016) Air pollutant emissions from aircraft have been subjected to less rigorous control than other traffic emissions. (Harrison et al., 2015) The growing civil aviation is mainly driven by globalisation and its impact on the environment is heavily debated, particularly in relation to climate forcing attributed to emissions at cruising altitudes and the noise and the deterioration of air quality at ground-level due to airport operations. (Masiol & Harrison, 2014)

All these and further aspects of our current consuming life are impacting the environment. Every consumer is expressing his/her consent with the activities conducted to produce and deliver the product by buying it. Where there is demand, the supply comes. The consumers influence the market through their behaviour and thus can influence the impact on the environment. The awareness of consumer of their power and the environmental impacts plays an important role. This paper intends to analyse this awareness of consumers based on a survey among university students of managerial studies about the well-known facts concerning the global consuming way of life and the industry impacts on pollution and changes in nature. It intends to analyse their social responsibility and attitude to become active in this field.

Corporate social responsibility and climate changes are topics of growing interest, particularly regarding their impact on consumer behaviour and sustainability of contemporary way of life. Sustainable development is based on economic development, social equity, and environmental protection and so directly related to ethics and corporate social responsibility.

This paper is organized as follows: next section describes the sample and used methodology. In section 3 the research findings are presented and discussed. The conclusion summarizes the outcomes.

## 2. Sample and methodology

The aim of the conducted research endeavour was to assess the awareness of young generation Y about the climate changes and their attitude to this topic. Therefore, a questionnaire surveying respondents represented the chosen methodology. It consisted of open and Yes/No questions.

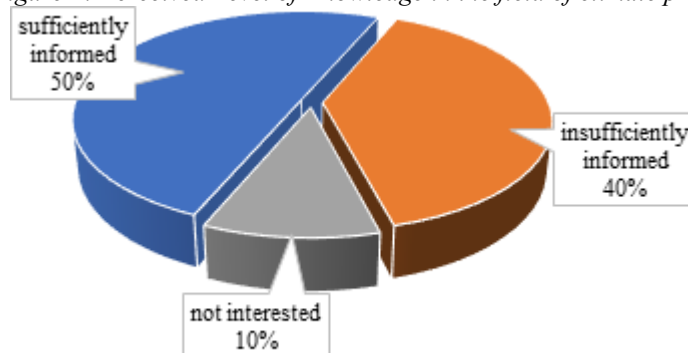
The sample consisted of 86 first year students of managerial studies as managers shall lead and manage in compliance with social responsibility and environmental protection towards sustainable operations. The sample coverage of genders is 33% male and 67% female.

The outcomes of the survey are presented in next section.

## 3. Research findings and discussion

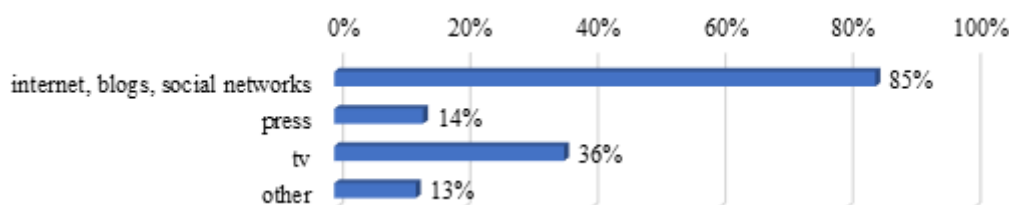
Respondents were asked to assess their own level of knowledgeableability on the topic of climate problems that became openly discussed in public since the US president announced his decision to cancel the participation of US on the Paris Convention. All participants of this convention voluntarily committed to conduct endeavour that is necessary to prevent further damages on environment. The perceived level of being informed is depicted in Fig. 1.

Figure 1: Perceived Level of Knowledge in the field of climate problems



Source: survey

Figure 2: Sources of information

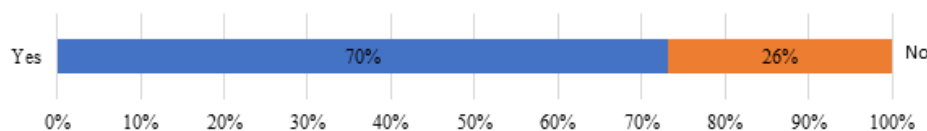


Source: survey

The majority of respondents perceived themselves sufficiently informed as the main stream informational channels are informing about various occurrences in the world that have their origin in climate and environment changes. As it can be seen in Fig. 2, the main source of information in given topic is internet, blogs and social networks on which 85% or respondents

rely on. As it can be seen, 1/3 of respondents (36%) uses television as source of information, followed by only 14% of participants who obtain the relevant information from printed press media. Among other sources, school, own experiences and observations were enumerated.

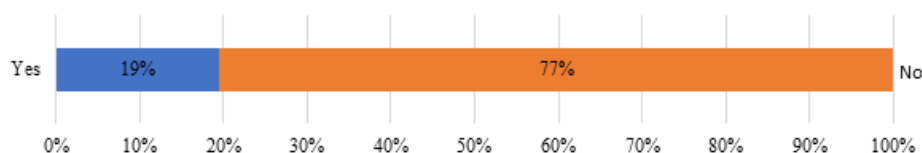
Figure 3: Perception of climate change impacts on environment observed in surroundings



Source: survey

As the impacts of climate changes can be perceived in changes of weather that achieves more extreme variances with each year: the summer gets hotter and the winter gets colder. But the most significant extreme variances can be seen in fast weather alternations and temperature shifts that also influence the vegetation and fauna. Extreme heat in summer with summer storms and wind, autumn full of heavy rain with overflowing rivers and flood, relatively warm winter and extremely low ground freeze in spring, etc. All these effects can be perceived by observing environment: 70% of respondents is aware of climate changes in their surroundings (Fig. 3).

Figure 4: Perception of being affected by climate changes

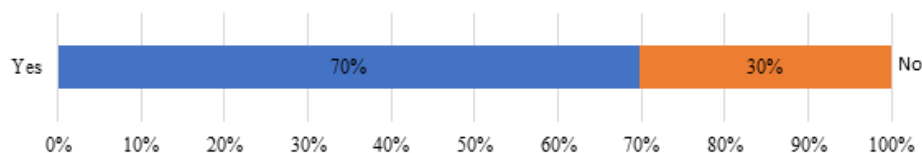


Source: survey

In the contrary to the perceived changes in the surroundings, that are perceived by 70% of participants, only 19% of respondents perceive themselves being affected by climate changes (Fig. 4). As effects affecting them, following phenomena were enumerated:

- Temperature variances, fast accidental weather variation, Global warming, Extreme heat, high temperatures = bad sleep
- Long-term drought with abnormally low rainfall, adversely affecting growing and/or living conditions, Destroyed harvest in the garden
- River and water pollution, Floods

Figure 5 Awareness on the consequences of climate changes



Source: survey

However, 70% of all respondents perceive themselves being aware of the consequences of climate changes (Fig. 5).

The participants enumerated following reasons/factors/actors for these climate changes with highest frequency:

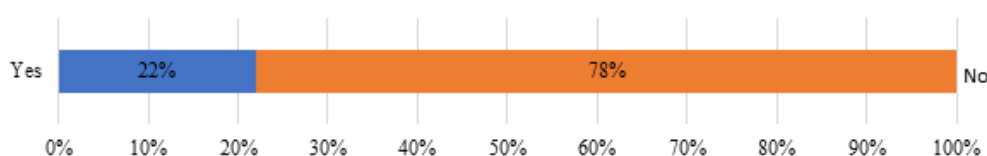
- People
- Countries without legislative environmental protection
- Imperfect use of natural resources

- Pollution, emissions, fabrics, vehicles, fossil fuels, CO<sub>2</sub>, fertilization, waste
- Global warming, greenhouse effect, ozone hole, chlorofluorocarbon (Freon), ice melting
- Irresponsible attitude towards environmental protection and damage
- Deforestation
- Toxic biologic waste

Despite relatively high awareness of climate changes and their consequences, the perceived awareness of activities that may mitigate the climate change that the respondents can do, was very low (Fig. 6): Only 22% of respondents knows what to do. Among those activities, respondents enumerated following activities:

- Recycling
- Using public transport, bicycle instead of car
- Reduced utilization of plastics, reduced use of non-renewable resources
- Informing other people

Figure 6: Awareness about activities mitigating climate changes



Source: survey

## 4. Conclusion

The climate changes are accompanied with several effects in natural environment that are affecting our everyday life, becoming more intense with each year. The continuously growing attention of broad public towards sustainable production, social responsibility and ethics impact consumer behaviour. Therefore, the awareness young generations and also future managers is important. This paper focused on assessing the awareness of young generation on climate changes and environmental protection by surveying students of managerial studies. The research findings confirmed relatively high informational level and awareness of the effects stemming from climate changes, however showed insufficient perceived awareness of activities that every person can do to collectively mitigate the climate changes and to protect the environment. The outcomes stress the need of more focus towards these phenomena in educational process that is of high importance.

## Acknowledgment

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## IMPACTS OF GLOBALIZATION ON SOCIO-ECONOMIC DOMAIN OF EMPLOYEES

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**Abstract.** “Globalization” is widely used to describe the increasing internationalization. Main factors contributing to it are liberalization of international trade, market unification, transition from welfare to liberalization and creating convenient investment conditions. It linked individual national markets through trade in goods, services, capital and information. Nowadays, employees stemming from different countries contribute to it, too. Globalization comes along with shifting power from national governments towards multinational corporations accompanied by protests of its opponents. The international division of labour is changing due to shifts of labour-intensive production to countries with lower labour cost, such Middle European countries. However, the corporate governance, technology-intensive production and research are kept in wealthy countries. This significantly increases the development differences among countries, industrialization and employment opportunities. This article focuses on sociological, economic and social aspects of globalization and emphasizes the development of human potential and changes in working conditions and employment character. It intends to cover the employment possibilities in multinational corporations including requirements and bonuses in Czech and Slovak Republics. Based on survey the socio-economic trends of today’s employees towards their future and level of satisfaction are analysed. This article aims to outline the most pressing problems from the employee’s point of view, which are mainly caused by the strength and possibilities of multinational corporations.

**Keywords:** globalization, employment, employee’s satisfaction

**JEL Classification:** F16, F66, J24

### 1. Introduction

The ways of life has significantly changed over the past century (Dávideková et al., 2015) through the emergence of information and communication technology (ICT). The Internet that allowed the most accessible “transport” media for informational exchange enabled the globalization to evolve. (Bauman, 2000) Globalization brings together people from various countries into one place building one team committed to a common goal and purpose creating an international and multicultural environment. (Dávideková & Greguš, 2016) To further drivers of globalization besides ICT belongs the so called economic migration (Bartram, 2011) enabled by liberal trade where individual companies can allocate resources independently on place of origin on their own (Coslovsky, 2016) that has been exploited within Schengen Area and represents a never-ending ongoing process. (Papastergiadis, 2013) Cultural diversity enriches interactions with new insights to work problems and tasks (Han & Beyerlein, 2016) despite its negative effect due to language barrier. (Downes-Martin et al., 1992) Experiences of

global virtual work lead to positive work's complexity and learning potential that in turn improves innovation, satisfaction and engagement. (Nurmi & Hinds, 2016)

Due to international competition and current ease of travel, job mobility and employee benefits became one of significant factors impacting employment and job satisfaction. (Fasang et al, 2012) External upward mobility is decisive to enhance satisfaction with objective working conditions and work-life balance, while internal mobility is pivotal for satisfaction with future career prospects. (Fasang et al, 2012) Lower job qualities are highly associated with flexible employment contracts and several benefits. (Dekker & van der Veen, 2017) Whereas better paid jobs are usually connected with longer commuting and less employee benefits. However, cultures differ in value hierarchies and thus the preferences in job selection may vary from culture to culture. Furthermore, people are individual beings and therefore, their satisfaction varies depending on their individual preferences.

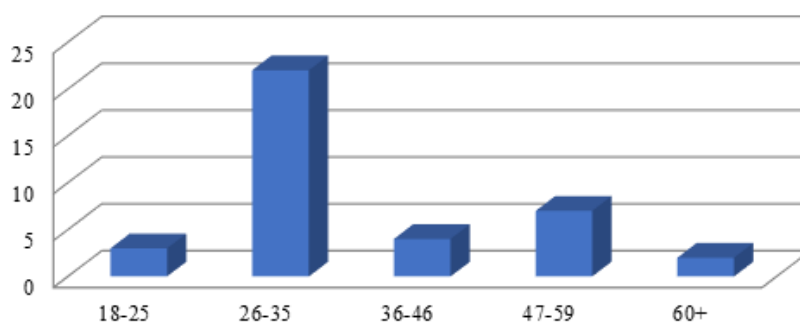
However, a job dissatisfaction due to various reasons leads to fluctuation of employees that may lead to know-how loss and thus has a long-term effect on the profit ability of given company. Therefore, this paper analyses the satisfaction of employees in global companies with focus on their preferences in selection of jobs to outline the directions of employee benefits that have the most significant impact on employee staying.

This paper is organized as follows: next section describes used methodology and sample. Section 3 describes achieved research findings followed by discussion. The conclusion summarizes the outcomes.

## 2. Methodology and sample

Surveying was made via electronic questionnaire. The questionnaire was available on Facebook and sent by e-mail to target groups working in selected companies in Czech Republic and Slovakia with more than 3000 employees and self-employed professionals such as Dell or Czech Aeroholding. Questionnaires were filled out online within the duration of one month. The final processing and evaluation of the survey was focusing on having equal coverage of male and female individuals in the sample (thus, 50% each). Respondents were selected from the administrative staff and IT departments.

Figure 7: Age coverage of surveyed sample



Source: Survey

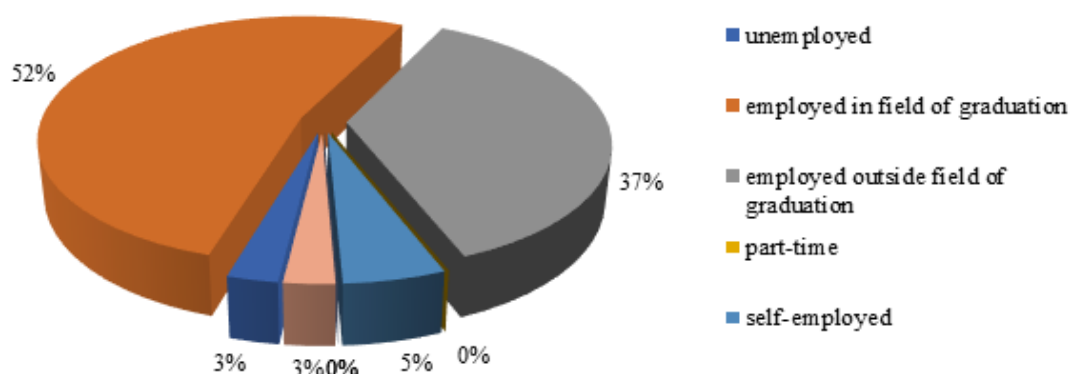
As more than a half of our respondents are in the active working age of 26-35 years. This can be influenced by high relevance of this topic to young people graduating from university, college of finishing secondary education. Further indicating factor is the utilization of information and communication technology that is more spread in younger generation as the invitation to this survey was in particular, by electronic form.

The pleasantly surprising fact is that category of 47-59 years is represented by almost 20% of all respondents, from which it can be concluded that even the older generation is not afraid to communicate via the Internet about their attitude to jobs and their attitude towards more globalization-friendly companies and the possibilities offered by such companies.

An interesting result of 52.6% of employees that are working in their field of study leads us to the idea that a large number of people are working outside their field of study especially because companies are starting to specialize in specific sectors in given regions such as IT or automotive industry. In those regions people have a problem of applying and finding employment in other fields. Additionally, IT is often a hobby at first and people learn it within their spare time. Thus, globalization now has socio-economic impact even on job choices by focusing on specific sectors in individual regions.

At the same time, these impacts are already a long-term trend because young people are moving away from regions with weaker employment possibilities to cities and to other parts of Europe, where they may benefit from employment within or outside their field of study and enjoy more advantageous socio-economic benefits. Such trend has a negative impact on the intelligence distribution of society in given country and its regions creating a larger discrepancy between wealthy and poor regions. At the same time, it has a positive influence on the opportunities that bring new jobs to open and adaptable countries in the form of moving their branches or factories.

Figure 8: Age coverage of surveyed sample



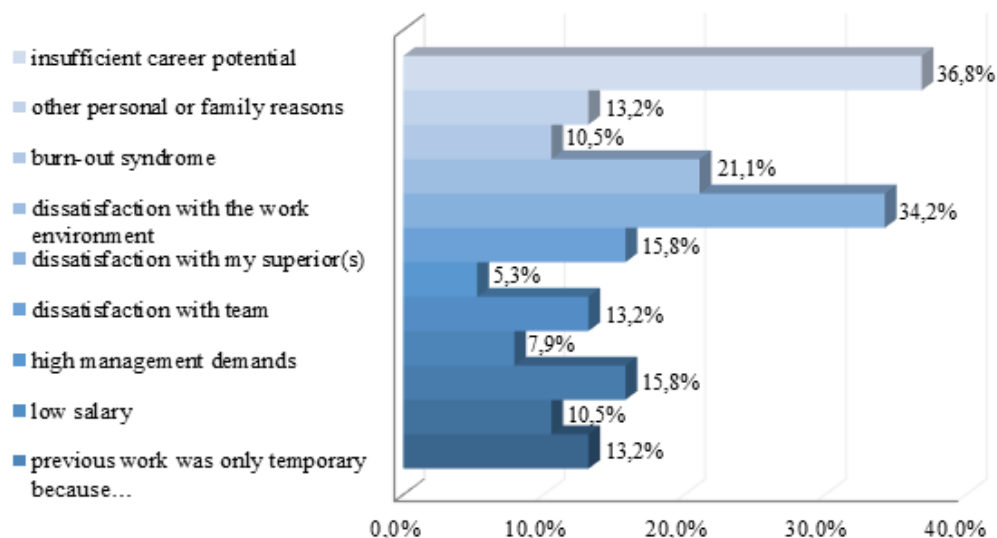
Source: Survey

The research findings are presented and discussed in following section.

### 3. Research findings and discussion

The dissatisfaction with current employment exceeded 25% of all respondents for the cases of dissatisfaction with superiors and inadequate or null career progression possibilities. As the majority of survey respondents were employed by global companies, we might deduce that the dissatisfaction with superiors may often stem from significant divergences in the nature, mentality and culture of distinguish nationalities. This is often caused by pursuing overwhelmingly the nature, mentality and culture of the founders or the higher-ranking company. At the same time, it is necessary to take the human relationships into consideration that became significantly complicated for agitations and interactions in multicultural environments and lead often to complex situations in terms of leadership and management.

Figure 9: Reasons for leaving previous job(s)

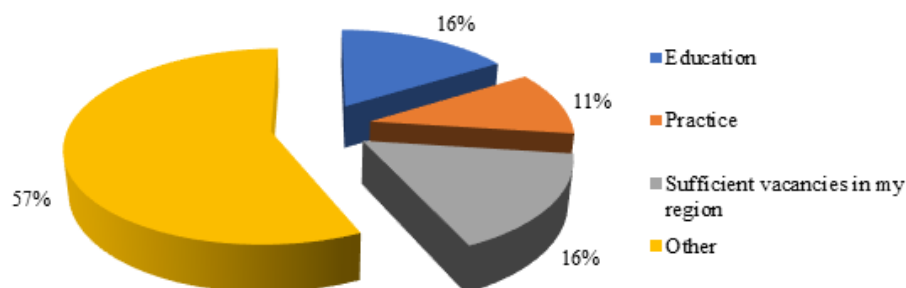


Source: Survey

Next reason can be found in the nature of staffing of projects where outsourced companies frequently use leasing of workforce for only one purpose and for only a temporary period of time and thus, to achieve the project goals. On the other hand, employees, usually people coming from previous east block that conclude middle and eastern Europe where the workforce is awarded with significantly less amount of money, are commuting to work or even leaving their region for employment in countries with higher hourly rate. In such cases, it is important to emphasize that such places do not offer almost any career potential growth perspective that may cause burnout or a decrease in the interest in continuing working in given job. From this it can be assumed that the globalization of companies and their behaviour towards employees has both social and economic impacts on society. We think it would be better to explore the capabilities of multinational companies that would adapt corporate culture to their respective countries.

As for the reasons why people stay in current employment despite their dissatisfaction with given conditions, the lack in education, practice and sufficient vacancies were together 43% (Fig. 4). However, the majority of the respondents gave other reasons: they reported fearing social concerns about the economic instability caused by a change of employment. This in first place caused by all the liabilities and responsibilities the respondents are bound to, whether economical aspects like mortgage loans without which today's young people have almost no chance of securing independent housing; or social concerns like the well-being of small children or good collectives. This all despite their incomplete satisfaction with current job, wage or other conditions. These fears are not to be attributed directly to globalization, but global banking trends in turbulently expanding credit products could be a frequent cause of the budgets of working families. In the past, it was more adventurous to save money on a given house or service. Nowadays, by speeding up the processes and the possibilities of most multinational banks, a new credit to cover existing credit can be borrowed. Reckless pursuit of profit can harm the environment and conflict with other social values. (Soros, 2002)

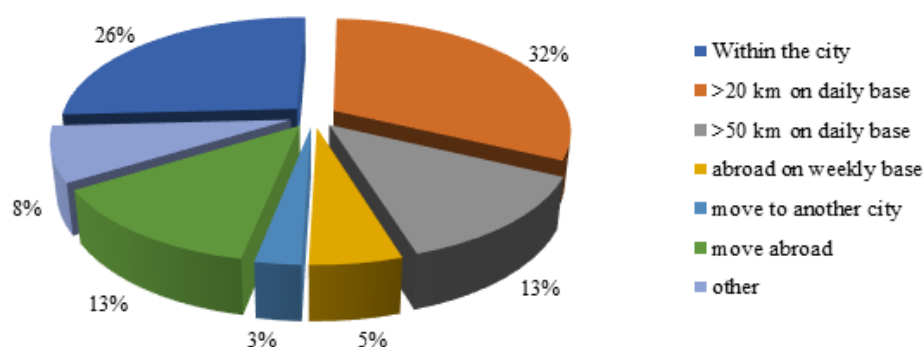
Figure 10: Perceived missing aspects in applying for another employment



Source: Survey

Almost 60% of the respondents expressed their reluctance to commute to work longer than 60 minutes for one direction. Nowadays, people are already aware that they have little free time remaining besides their working time that may be even disproportionately distant from their place of residence. The willingness to commute to work and to travel is only when: "it will have a significant contribution to my further development" (source: survey) or "depending on the conditions and the current situation" (source: survey). Today, when working from home (home office) and remote working via the omnipresent internet network, the willingness to commute to work and to travel is decreasing significantly.

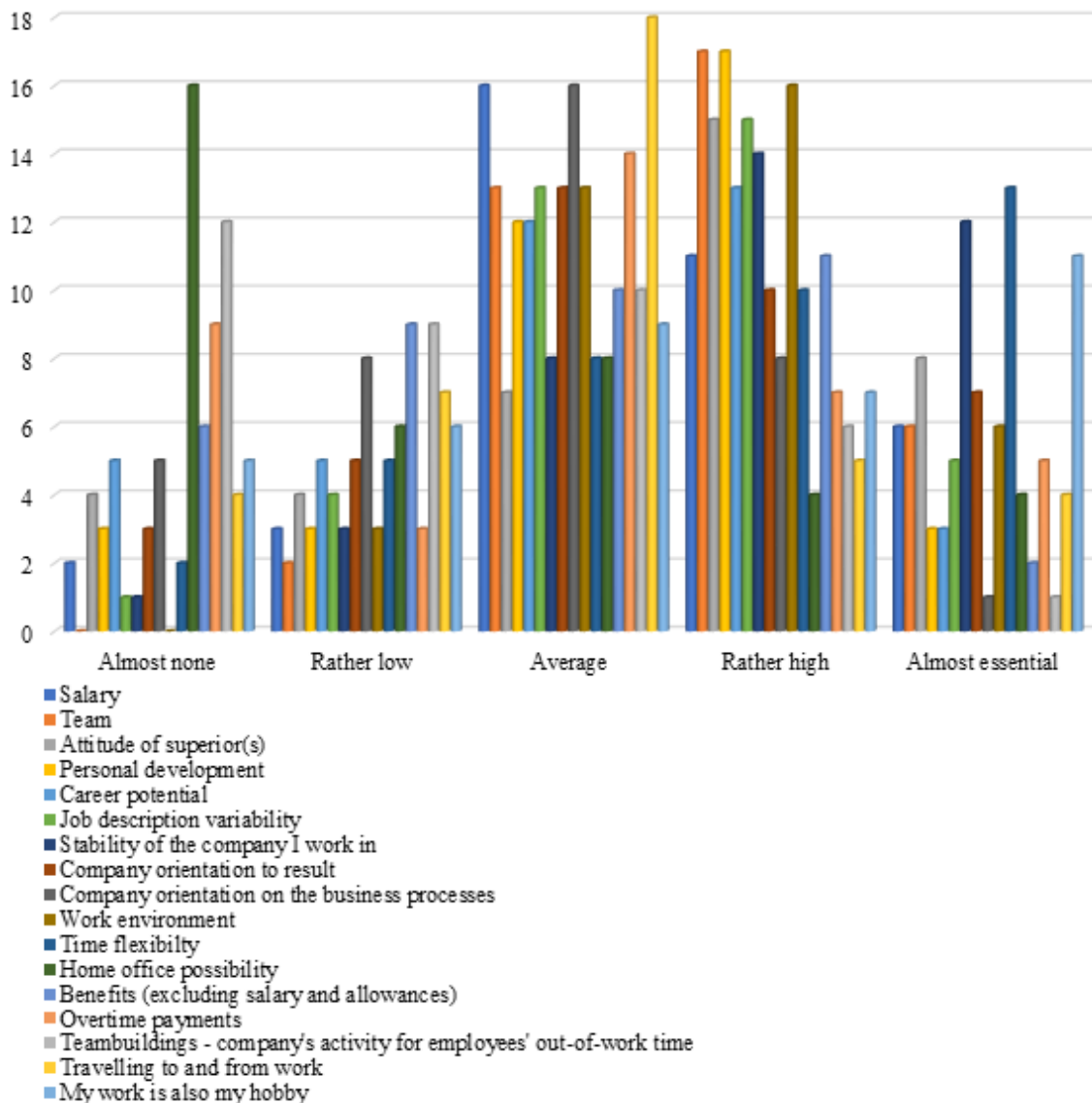
Figure 11: Willingness to commute to work



Source: Survey

A next survey outcome connected to this topic is also the assessment of benefits of employment that the respondents appreciate at their work the most. It was an open answer question where up to 70% of respondents expressed their feeling of being weakly financially awarded and would prefer 13<sup>th</sup> and 14<sup>th</sup> salaries. Besides that, the overwhelming majority of respondents (90%) would appreciate an increase of the number of annual holiday pool or at least to have the possibility of working remotely from home (so called home office). At the same time, almost all respondents expressed their desire to have flexible working hours in terms of work beginning and end according to their needs. Thus, employees are willing to commute to work and to travel for better economic conditions. However, in the case of lower economic remuneration, they require benefits of a short distance between home and workplace and better leisure time arrangements. Basically the well-known statement "time is money" (Connors et al, 2016; Wrenn and Irwin, 2015) is valid also for selection of employment possibilities. The time spent on traveling may be compensated by higher income, however, the time lost to commute to work with lower remuneration the employee rather devote to themselves.

Figure 12: The influence of individual factors to remain in current employment



Source: Survey

Subsequently after overcoming the financial and economic crisis, globalization has a significant impact on the choice of the future employer. Up to 50% of respondents expressed their attitude to the factors influencing their job selection being impacted mostly by the stability of the company they would like to work for. This was followed by the possibility of time flexible working hours that 48% of all respondents stressed as one of the most important factors. Further, new factor of high importance to respondents (up to 47%) is also associated with the team in which they would like to work. Especially, as many as 38% of respondents were not interested in the Home office, despite the fact that they were preferring this option in the pre-eminent questions. Furthermore, 43% of participants expressed a strong emphasis on the working environment and the variability of work during job selection. Transnational globalization is governed by the principle of profit. It is recklessly contra-ecological, ignoring the needs, interests and cultural traditions. (Bondy, 2005)

One of surprising outcomes of the survey was the disinterest of the majority of respondents (80%) in teambuilding and activities with colleagues outside working hours.

## 4. Conclusion

This paper analysed the current satisfaction of people with their current employment and their attitude towards commuting to work by focusing on the impacts of globalization through preselection of respondents. The research was conducted through surveying employees of global companies.

As it can be concluded from the research findings, globalization as such has a social and economic impact on employment as well. We often see these effects only in the negative light, but each coin has two sides. As it negatively influences e.g. the brain drain and the movement of young people for work outside of Slovakia, it also brings jobs to less wealthy regions in the form of foreign investors. In this work, we also encountered an interesting phenomenon of corporate culture of multinational companies, which we might be able to address in future as part of another project. All of the theoretical currents conclude that globalization has not led to fundamental changes in international relations but has created a new framework for their further development. (Eichler, 2009)

## Acknowledgment

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## GLOBALIZATION AND THE TELECOMMUNICATION MARKET OF RUSSIA: STRUCTURE AND PRICING POLICY

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**Abstract.** One of the more apparent results of the globalization encompassing all the aspects of human life is the development of the mobile communication. The cellular communications market is one of the most profitable and attractive sectors of the world economy. In Russia (RF), this market has been experiencing a rapid development throughout the last 10-15 years. Therefore, the major operators have quickly tapped and occupied this market and now strive to keep out any new players. The study of the various aspects of the current situation in the Russian telecommunication industry and the prospects of its further development has been a part of the authors' scientific interests for a long time. In the two new articles on this topic, the authors address the analysis of the pricing strategies of the main operators of Russian telecommunication market. Within the first article, the authors calculated the concentration ratios within the industry. Their values lead them to the conclusion about the "diluted" oligopoly that has fully emerged by now in the mobile communication market. As the result of our research, the authors came to certain conclusions about the character of the pricing policies of the main mobile operators of the Russian Federation, as well as the strategies they implement in view of the price differentiation within the different regions.

**Keywords:** telecommunication market, market concentration indexes, type of market, price policy

**JEL Classification:** L11, L13, L96, D4

### 1. Introduction

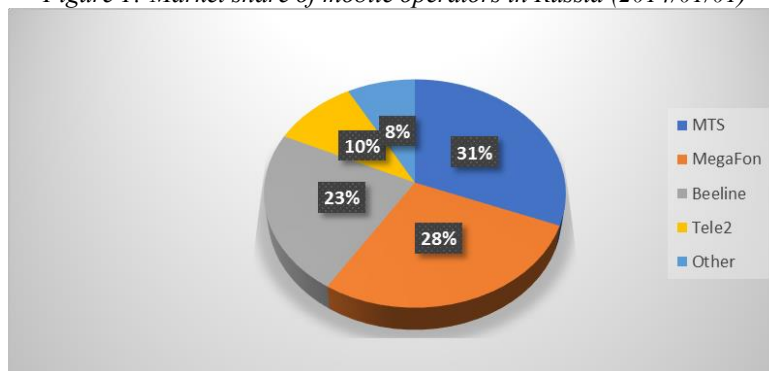
Within the preceding series of articles, the authors studied the problem of credit risks faced by the Russian telecommunication companies in 2006-2007, before the previous crisis of 2008-2009, which has significantly changed the structure of the Russian mobile service market. (Dengov & Tulyakova, 2015, A) Some companies completely ceased to exist, the others merged, and yet the others were absorbed by the stronger competitors. Among the reasons for a drastic repartition of the market of telecommunication services, as actually any other market, one can name the problems of financial instability of the companies and unjustified credit risks. (Gavlakova & Gregova, 2013; Gavlakova et al., 2014; Valaskova, 2016; Siekelova & Gregova, 2016; Weissova & Gregova, 2016) The authors suggested two methods for the study of the credit risks of a company. The cluster and discriminant function analyses became the basis for a statistical model. (Dengov & Tulyakova, 2015, B) As the second method for the evaluation of the credit risk, the authors used the model based on the fuzzy sets

theory. In the conclusion of that stage of their research, the authors compared the results that they achieved by using those models for the evaluation of the credit risks. (Dengov & Tulyakova, 2015, C; Hsueh, 2016; Rhee, 2016) On this new stage in their analysis of the telecommunication market of the RF, the authors concentrated on the aspect of price. The price of mobile services is a major factor, influencing the decision of the subscriber when opting for one provider of such services over the other. (Jerbashian & Kochanova, 2017; Sutherland, 2014) Exactly therefore the companies pay special attention to the pricing process and their pricing strategies, since the favorable choice of the subscribers significantly influences their competitive power and profit. (Trebing, 1995; Gospic et al., 2000; Ojo, 2017)

## 2. Object of investigation and analysis technique

The object of the research in this article is the Russian mobile communication market, and the subject - the strategies chosen by the mobile operators and the regional peculiarities of their pricing policies depending on a number of different factors. The authors needed to verify the suggested hypothesis that the price of cellular services in each region of the RF depends on such factors as the living standard of the population, the extent of competition between the operators and the demand for the mobile services within this region. In the case of confirmation of the hypothesis, one could come to the conclusion about the existence of the price discrimination of the third type (according to the price elasticity of the demand by the subscribers) within the mobile communication market of the RF. It is worth noting here, that this problem is valid not only for the RF, but also for other countries with the pronounced regionalization of the markets, for instance, for the PRC. (Feng et al., 2015) The specifics of the pricing policy in any industrial market ultimately depend on the type of market. (Dengov et al., 2016; Maksimov et al., 2016; Mumuni et al., 2017; Kang et al., 2017) Speaking about the mobile communication market of the RF, there are currently 22 companies active there. At the same time, one can safely say that the dominant positions in the market belong to only four major companies. – *MTS*, *MegaFon*, *Beeline* & *Tele 2*. Their joint market share constitutes 92% of the market (Fig. 1).

Figure 1: Market share of mobile operators in Russia (2014/01/01)



Source: «Advanced communications and Media» <http://www.acm-consulting.com/>

The market concentration ratio was one of the first indexes to be used in the modern praxis. In RF, the official statistical records started calculating and publishing this ratio since 1992 for three ( $CR_3$ ), four ( $CR_4$ ), six ( $CR_6$ ) and eight ( $CR_8$ ) major players. As we can see on the diagram, the biggest market share in RF belongs to the *MTS*. Its share in the Russian market constitutes 31%, that is, nearly a third of the entire market. The second biggest is the mobile operator *Megafon*, the market share of which is just a little smaller than the one of *MTS* - 28%. *Beeline* has a somewhat smaller share as well – 23%, and *Tele2* owns the share that constitutes about one tenth of the market. One should also take into consideration that unlike the first three operators (the so-called “Big Three”), active in all the 83 regions of the RF, *Tele2* is present in but a half of them, concentrating primarily on the Northwestern

Federal District. The other mobile operators in RF jointly own only 8% of the entire market. Thus, the  $CR_4$  equals 92%, which speaks about a very high level of concentration within the industry.

However, the well-known drawbacks of this index make it necessary to verify the hypothesis of the oligopolistic nature of the Russian mobile service market by calculating the other indices – the Herfindahl-Hirschman index (HHI) and the Linda index. Unlike the concentration ratio, the HHI takes in the account both the number of the companies within the market and their unequal positions therein. It is generally accepted, that if the HHI exceeds 1800, the industry can be defined as an oligopoly. The calculation of the HHI for the Russian market produced the value 2449, which bespeaks an extremely high level of market concentration. It was not necessary to calculate any other concentration indices, since it became quite apparent that the mobile service market in RF has a pronounced oligopolistic nature. Such a situation creates clear premises for the restraint of competition and price discrimination.

## 2.1 Factors influencing the price of the mobile communications

As the main factors influencing the price of the mobile communication in each particular region, the authors selected the following: (1) the living standard of the population, (2) the extent of competition, and (3) the demand for the mobile services. The living standard allows one to evaluate the household income. If the household income in this particular region is low, the people are using the mobile services less, since their purchasing power is weak as well, thus, the operators need to lower the price of their services. If the opposite is true and the household income is high, the operators tend to implement the over-pricing policy.

The extent of competition defines the presence of potential options for the subscribers of services. In pricing their products, the operators need to take this index in consideration, since, on the one hand, if there are few competitors in the market, the operator has no incentive to lower the prices, and the existing competitors may even enter into a conspiracy in order to increase their profits; and on the other hand, numerous competitors motivate the companies to considerably lower their prices. The demand for the mobile services is also a significant factor, influencing the pricing. In the case of high demand, the operators often set higher prices for their communication services. As a rule, the high demand is more common in the higher populated regions and in the regions with less population, the demand for the communication services is equally lower. To build the model for the dependence of price on the selected factors, one can take the per capita income as an index for the living standard, the number of active operators in the region - as an index for the extent of competition, and use the volume of the communication services provided per capita of the population (calculated as the relation of the total cost of provided services to the annual average size of the population) as an index for the demand for services.

In the course of the market research, the authors established that in the different regions of RF, the mobile operators tend to provide the same service plans at different prices, which leads to the differentiation of the price of the consumer basket depending on the region. The data on the selected indices in all the regions of the RF is presented in the Tab.1.

*Table 1: Indicators of the standard of living of the population, the degree of competition and demand for mobile communications services in every region of Russia for 2014*

	Monetary income per head, (₽)	The volume of communication services rendered to population, per capita, (₽)	Number of large operators in the region, (units)
Altajskij kraj	15 979,1	3 903,4	4
Amurskaya oblast'	24 671,1	6 301,6	3
Arhangel'skaya oblast'	24 774,9	4 249,5	4
Astrahanskaya oblast'	19 777,5	4 771,9	4
Belgorodskaya oblast'	23 734,7	4 487,8	4
Bryanskaya oblast'	20 151,8	3 447,0	4

Vladimirskaia oblast'	18 796,4	3 616,2	4
Volgogradskaya oblast'	17 589,6	4 423,5	3
Vologodskaya oblast'	20 513,2	3 189,1	5
Voronezhskaya oblast'	22 056,0	4 488,9	4
Evrejskaya AO	20 417,4	3 506,2	4
Ivanovskaya oblast'	18 123,2	3 196,7	4
Irkutskaya oblast'	19 424,5	5 162,3	4
Kabardino-Balkariya	15 297,0	3 862,8	3
Kaliningradskaya obl.	20 641,8	4 609,7	4
Kaluzhskaya oblast'	23 182,1	4 728,5	4
Kamchatskij kraj	35 371,4	10 615,2	5
Karachaevo-CHerkessiya	14 664,0	4 000,3	3
Kemerovskaya oblast'	19 697,4	4 213,4	4
Kirovskaya oblast'	18 011,7	4 243,5	4
Kostromskaya oblast'	17 575,0	3 896,8	4
Krasnodarskij kraj	25 777,4	5 264,8	4
Krasnoyarskij kraj	24 921,7	5 344,3	4
Kurganskaya oblast'	17 582,5	4 068,7	5
Kurskaya oblast'	20 809,4	3 415,3	4
Leningradskaya oblast'	20 161,4	10 111,9	4
Lipeckaya oblast'	22 222,0	4 194,5	4
Magadanskaya oblast'	42 462,6	10 270,9	5
Moskva	54 869,5	11 693,6	3
Moskovskaya oblast'	32 738,9	11 693,6	3
Murmanskaya oblast'	32 912,2	5 123,7	4
Neneckij AO	66 276,0	480,5	4
Nizhegorodskaya oblast'	24 502,7	6 849,5	5
Novgorodskaya oblast'	21 391,9	3 926,5	4
Novosibirskaya oblast'	22 597,4	5 377,3	4
Omskaya oblast'	21 363,7	4 104,9	4
Orenburgskaya oblast'	18 628,1	4 197,2	3
Orlovskaya oblast'	18 262,4	3 470,7	4
Penzenskaya oblast'	17 815,2	4 236,6	5
Permskij kraj	26 054,3	4 443,0	4
Primorskij kraj	24 342,5	7 010,2	4
Pskovskaya oblast'	17 803,6	3 558,3	4
Respublika Adygeya	18 512,5	1 491,4	4
Respublika Altaj	14 751,7	2 178,0	3
Bashkortostan	23 892,3	3 569,0	4
Respublika Buryatiya	20 784,6	4 227,8	4
Respublika Dagestan	21 716,6	2 824,3	3
Respublika Ingushetiya	13 820,9	3 242,5	3
Respublika Kalmykiya	11 310,8	2 140,6	4
Respublika Kareliya	21 493,6	3 826,1	4
Respublika Komi	29 335,0	6 463,6	4
Respublika Marij El	14 517,2	3 133,5	5
Respublika Mordoviya	14 432,8	4 138,3	5
Respublika Saha (Yakutiya)	31 528,2	7 455,0	3
Severnaya Osetiya - Alaniya	17 788,1	4 967,3	3
Respublika Tatarstan	26 161,2	4 999,8	5
Respublika Tyva	13 471,8	730,5	3
Respublika Hakasiya	17 875,7	5 475,1	4
Rostovskaya oblast'	20 994,7	4 552,7	4
Ryazanskaya oblast'	19 828,2	3 605,0	4

Samarskaya oblast'	26 864,9	5 132,7	4
Sankt-Peterburg	31 407,2	10 111,9	4
Saratovskaya oblast'	16 034,9	4 319,5	5
Sahalinskaya oblast'	39 970,8	10 196,0	4
Sverdlovskaya oblast'	31 013,0	5 372,1	5
Smolenskaya oblast'	19 982,1	4 216,0	4
Stavropol'skij kraj	19 767,5	4 443,4	3
Tambovskaya oblast'	19 833,6	3 990,5	4
Tverskaya oblast'	19 105,9	3 938,8	4
Tomskaya oblast'	20 429,5	4 506,0	4
Tul'skaya oblast'	20 903,1	3 948,6	4
Tyumenskaya oblast'	24 731,3	7 354,5	4
Udmurtskaya Respublika	18 660,3	3 759,6	4
Ul'yanovskaya oblast'	18 580,1	4 738,6	5
Habarovskij kraj	29 382,4	7 573,2	3
Hanty-Mansijskij AO-Yugra	39 291,7	9 339,9	5
Chelyabinskaya oblast'	21 888,2	4 396,1	5
Chechenskaya Respublika	17 187,7	3 711,5	3
Chuvashskaya Respublika	15 264,0	2 707,0	5
Chukotskij AO	52 694,9	9 267,5	3
Yamalo-Nenetskij AO	58 040,4	10 976,7	5
Yaroslavskaya oblast'	21 126,8	4 206,9	4

Source: Federal State Statistics Service [Online]. [07.08.2015]. Available on: <http://www.gks.ru/>.

## 2.2 Methods of analysis

To achieve the goal of the research and solve the problems they set for themselves, the authors built the regression models of the dependence of the average price of the services of mobile operators in the region on the selected factors. They chose the following types of the multiple regression equations as the modelling functions for the purposes of this work:

$$1. \text{ Linear regression} \quad y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \varepsilon \quad (1)$$

$$2. \text{ Power-law} \quad y = b_0x_1^{b_1}x_2^{b_2}x_3^{b_3}\varepsilon \quad (2)$$

$$3. \text{ Exponential} \quad y = e^{b_0+b_1x_1+b_2x_2+b_3x_3+\varepsilon} \quad (3)$$

$$4. \text{ Hyperbolic} \quad y = \frac{1}{b_0+b_1x_1+b_2x_2+b_3x_3+\varepsilon} \quad (4)$$

The last three modelling functions are the nonlinear multiple regression equations. As you know, there are two types of nonlinear multiple regressions:

1. Highly linear (quasilinear) regressions – regressions, where nonlinearity is present only in the form of nonlinear function in respect to the independent variables  $X_i$ .
2. Highly nonlinear regressions – regressions, where the nonlinearity is also represented by the nonlinearity of parameters  $\beta_i$  themselves. (Ferster & Rents, 1979)

One can directly apply the least square method towards the highly linear regressions, unlike those of the highly nonlinear type. To be able to apply this method to some of the regressions of the second type, it would be necessary to first subject the initial data to certain transformations, which are basically intended for the linearization in respect to the evaluated parameters of the dependences in question. The elasticity coefficient for the multiple regression is found as follows:

$$E = y_{x_i}' \frac{\bar{x}_i}{\bar{y}}, i = 1, 2, \dots, m \quad (5)$$

where  $m$  is the number of independent variables;  $y_{x_i}'$  – the partial derivative with respect to  $x_i$ ;  $\bar{x}_i$  – the mathematical expectation of a sample of the independent variable  $x_i$ ;  $\bar{y}$  – the mathematical expectation of the sample of the dependent variable  $y$ .

The elasticity coefficients for different models of regression look as follows:

$$1. \text{ Linear regression } E = (b_0 + \sum_{j=1}^m b_j x_j^j)' \frac{\bar{x}_i}{\bar{y}} = b_i \frac{\bar{x}_i}{\bar{y}}, i = 1, 2, \dots, m \quad (6)$$

$$2. \text{ Power-law } E = (b_0 * \prod_{j=1}^m x_j^{b_j})' \frac{\bar{x}_i}{\bar{y}} = b_i, i = 1, 2, \dots, m \quad (7)$$

$$3. \text{ Exponential } E = (e^{b_0 + \sum_{j=1}^m b_j x_j^j})' \frac{\bar{x}_i}{\bar{y}} = b_i \bar{x}_i, i = 1, 2, \dots, m \quad (8)$$

$$4. \text{ Inverse } E = \left( \frac{1}{b_0 + \sum_{j=1}^m b_j x_j^j} \right)' \frac{\bar{x}_i}{\bar{y}} = b_i \bar{x}_i \bar{y}, i = 1, 2, \dots, m \quad (9)$$

where  $b_0, b_j, j = 1, \dots, m$  is the estimation of parameters.

### 3. The dependence of the average service prices of mobile operators in the region on the selected factors

The regression models of the dependence of the average service prices of mobile operators in different regions on the above-described factors were built by using the «gretl» program.

Figure 1: Linear dependence of the average price for mobile communications on average revenue, the volume of communication services and the number of competitors

Model1: OLS, observations were used 1-83

Dependent variable Y

	Coefficient	Standard error	t-statistic	p-value
const	340,218	35,3878	9,614	6,19e-015 ***
x1	0,00359538	0,000678448	5,299	1,02e-06 ***
x2	0,0118310	0,00281258	4,206	6,79e-05 ***
x3	-35,4364	8,31657	-4,261	5,58e-05 ***

Average of Dependent Variables	343,4530	Standard deviation of dependent variables	76,61602
Sum of squared residuals (SSR)	184854,7	Standard error	48,37285
R squared ( $R^2$ )	0,615959	Adjusted $R^2$	0,601375
F (3, 79)	42,23576	P-value (F)	2,17e-16
Logical likelihood	-437,6740	Akaike criterion (AIC)	883,3480
Schwarz criterion	893,0234	Hannan–Quinn information criterion (HQC)	887,2351

Figure 2: Power-law dependence of the average price for mobile communications on average revenue, the volume of communication services and the number of competitors

Analytical derivatives are used

Inaccuracy = 1,81899e-012

Convergence is achieved after 38 iterations

Model 2: Nonlinear OLS, observations were used 1-83

$Y = \exp(\delta + x_1^\alpha + x_2^\beta + x_3^\gamma)$

	Evaluation	Standard error	t-statistic	p-value
alpha	0,380135	0,0450672	8,435	1,24e-012 ***
beta	0,0813688	0,0309180	2,632	0,0102 **
gamma	-0,476362	0,0896596	-5,313	9,70e-07 ***
delta	7,29783	3,15949	2,310	0,0235 **

Average of Dependent Variables	343,4530	Standard deviation of dependent variables	76,61602
Sum of squared residuals (SSR)	191331,1	Standard error	49,21293
R squared ( $R^2$ )	0,602504	Adjusted $R^2$	0,587410
Logical likelihood	-439,1031	Akaike criterion (AIC)	886,2062
Schwarz criterion	895,8815	Hannan–Quinn information criterion (HQC)	890,0932



Figure 3: Hyperbolic dependence of the average price for mobile communications on average revenue, the volume of communication services and the number of competitors

Analytical derivatives are used  
Inaccuracy = 1,81899e-012

Convergence is achieved after 4 iterations

Model 3: Nonlinear OLS, observations were used 1-83  
 $Y = 1 / (\text{delta} + x_1 * \alpha + x_2 * \beta + x_3 * \gamma)$

	Evaluation	Standard error	t-statistic	p-value
delta	0,00281003	0,000248331	11,32	3,35e-018 ***
alpha	- 2,00174e-08	3,68911e-09	- 5,426	6,13e-07 ***
beta	- 8,44654e-08	1,68078e-08	- 5,025	3,06e-06 ***
gamma	0,000266754	5,60196e-05	4,762	8,55e-06 ***

Average of Dependent Variables 343,4530 Standard deviation of dependent variables 76,61602  
Sum of squared residuals (SSR) 173132,3 Standard error 46,81398  
R squared ( $R^2$ ) 0,640313 Adjusted  $R^2$  0,626654  
Logical likelihood - 434,9552 Akaike criterion (AIC) 877,9104  
Schwarz criterion 887,5857 Hannan–Quinn information criterion (HQC) 881,7974

Figure 4: Exponential dependence of the average price for mobile communications on average revenue, the volume of communication services and the number of competitors

Analytical derivatives are used  
Inaccuracy = 1,81899e-012

Convergence is achieved after 4 iterations

Model 3: Nonlinear OLS, observations were used 1-83  
 $Y = \exp(\text{delta} + x_1 * \alpha + x_2 * \beta + x_3 * \gamma)$

	Evaluation	Standard error	t-statistic	p-value
delta	5,87659	0,0939505	62,55	4,65e-069 ***
alpha	8,99052e-06	1,51595e-06	5,931	7,56e-08 ***
beta	3,20307e-05	6,59205e-06	4,859	5,87e-06 ***
gamma	-0,106656	0,0220578	-4,835	6,44e-06 ***

Average of Dependent Variables 343,4530 Standard deviation of dependent variables 76,61602  
Sum of squared residuals (SSR) 172937,4 Standard error 46,78762  
R squared ( $R^2$ ) 0,640718 Adjusted  $R^2$  0,627074  
Logical likelihood - 434,9084 Akaike criterion (AIC) 877,8169  
Schwarz criterion 887,4922 Hannan–Quinn information criterion (HQC) 881,7039

After the analysis of the acquired models, we came to the conclusion that all the models are acceptable, as demonstrated by their determination coefficient –  $R^2$ . The most exactly describing model is the model with exponential dependence, since its determination coefficient is the closest to one. On the basis of the model in question, the regression equation with the coefficients correct to two decimal places looks as follows:

$$y = e^{5,88+8,99*10^{-6}x_1+3,20*10^{-5}x_2-0,11x_3+\varepsilon} \quad (10)$$

where  $y$  – the average cost for the services of operators,  $x_1$  – cash incomes on average per capita,  $x_2$  – the volume of services rendered to population, per capita,  $x_3$  – number of major operators in the region. All the coefficients within the created model are significant with the confidence interval of 1%, which can be seen from the acquired P-values. The values of the standard errors of the coefficients are small (the calculated values may fluctuate within the limits of a standard error). It is noteworthy, that for the model in question the determination coefficient value is 0.64, which tells us that this model may be considered as quite acceptable. The possible explanation for the inaccuracy of this model can be related to the fact that it does not take in consideration the cost of the provision of mobile services, which also influences their average price. It is also noteworthy, that the appearance of another competitor in the mobile service market of the region leads to the lowering of the price of services by 11%.

## 4. Conclusions

Thus, we may conclude that:

- firstly, by now the Russian mobile market has developed a clearly pronounced market structure, which – in view of the four dominating companies – can be described as a “diluted” oligopoly;



- secondly, the hypothesis that the price of the mobile communications in any particular region of the Russian Federation depends on such factors as the living standard of the population of this region, the extent of the competition in this region and the demand for the mobile communication services in this region was proved;
- thirdly, the regression analysis confirms the presence of the first and the most important condition for the effective implementation of the price discrimination of the third type – the actual segmentation of the Russian market according to the geographic position, income, and the individual preferences and options available in the market. Moreover, it does also follow from here, that the market also meets the second condition for the presence of the price discrimination of the third type – the operators separate the market into different segments according to the elasticity of demand.

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# QUALITY MANAGEMENT SYSTEM AS A GLOBAL TOOL FOR INTERNATIONAL CORPORATE DEVELOPMENT AND INCREASING COMPETITIVENESS

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**Abstract.** In the modern globalizing world, the understanding of quality and quality management has become an integral part of the business world. Models and standards have different evaluation criteria and principles, but they have a common objective – to support competitive, balanced and sustainable corporate development. The purpose of the article is to evaluate and develop four main business process management spheres: resource management, document management, determination of management competence, managing efficiency and improvement. The main emphasis of this research is on process analysis, measurement and development, thereby optimising processes and reducing resource consumption in a company. In this research, analytical, comparative and social research method methods have been used. Conclusions are made about the quality management system implementation, as an effective management tool, as well as a factor for increasing competitiveness. Summarising the results of the study, the following findings and recommendations can be made: Quality awareness is essential for increasing competitiveness of private sector businesses; In order to ensure continuous development, companies need to undergo self-assessment by using the TQM philosophy; The authors believe that quality assurance is one of the most important factors in crisis situations and for the promotion of economic growth; The number of companies that implement various quality management systems is increasing worldwide, but very slowly. By ensuring total quality management in an international business environment, the common understanding of the corporate objectives can be achieved - it promotes national competitiveness in an international environment and increases productivity.

**Keywords:** quality, systems, globalization, competitors, efficiency

**JEL Classification:** M1-M2

## 1. Introduction

Today, when starting up a business in a small country with an open market, wherein there is strong competition, it is essential to focus one's efforts on competitiveness and efficiency, and the implementation of quality management processes, the involvement of competent quality managers is the key to achieve both these aspects.

To start with, we would like to outline Latvia's competitiveness in comparison with its neighbouring countries, whose companies are important competitors and at the same time business partners for Latvian enterprises. Since 2013, Latvia has been included in the World Competitiveness Review, compiled by the IMD Global Competitiveness Research Center. In the latest

competitiveness report, Latvia is ranked 40<sup>th</sup> among the estimated 63 countries. Lithuania ranks 33<sup>rd</sup>, Estonia 30<sup>th</sup>, Poland 38<sup>th</sup>, Finland 15<sup>th</sup>, Sweden 6<sup>th</sup>, and Ireland 6<sup>th</sup>. (IMD, 2017) Thus it is clear that Latvia's competitiveness is assessed lower. Table 1 summarizes such important competitiveness assessment elements as the comparison of business efficiency and sub-factors of business efficiency for these countries.

Table 1: Business Efficiency (BE) and Business Efficiency Sub-Factors

Country	BE* 2013	BE 2014	BE 2015	BE 2016	BE 2017	Productivity & Efficiency** 2016/2017	Labour market 2016/ 2017	Finance 2016/ 2017	Management Practice 2016/ 2017	Attitudes and Values 2016/ 2017
Estonia	39	32	36	34	32	44/37	41/41	36/ 36	30/ 23	28/ 26
Ireland	13	4	13	2	3	1/1	19/ 18	18/ 23	6/ 7	2/ 3
<b>Latvia</b>	<b>49</b>	<b>38</b>	<b>43</b>	<b>43</b>	<b>39</b>	<b>40/ 40</b>	<b>42/40</b>	<b>47/45</b>	<b>41/36</b>	<b>36/35</b>
Lithuania	26	35	23	28	33	32/ 34	31/ 37	41/ 43	19/ 21	24/ 33
Poland	35	36	32	32	37	28/ 25	35/ 36	34/ 39	22/ 42	49/ 45
Finland	20	13	19	21	13	17/ 16	40/ 34	13/ 10	15/ 9	30/ 20
Sweden	3	8	9	4	9	6/ 4	18/ 27	5/ 9	4/ 11	6/ 4

\* Business Efficiency –rank out of 61(2013–2016) or 63 economies (2017), the higher the better position.

\*\* Business Efficiency sub-factors 2016, 2017

Source: designed by the author according to (IMD, 2017)

Text Latvia's business efficiency and sub – factors of business efficiency are assessed lower than the countries compared, although an increase in the assessment of these factors can be seen. It is worth mentioning that over a period of 5 years Latvia's position has fluctuated from 41<sup>st</sup> (2013) to 35<sup>th</sup> (2014), 43<sup>rd</sup> (2015) and 37<sup>th</sup> (2016). (IMD, 2017)

The research carried out by Bruksle & Ābetiņa & Zariņa also found that the competitiveness of the Latvian business environment was assessed as problematic, which sets the need for entrepreneurs to be able to constantly adapt to changing circumstances. However entrepreneurs have a clear vision of possible solutions. Assessing the changes in the overall situation in Latvia over the past five years, a moderate change in the business environment and processes can be observed that are closely related to changes in global markets. (Bruksle et al., 2016) We believe that the quality management system and the solutions they offer can help to cope with problems and promote competitiveness of both Latvian companies and the state as a whole.

We have further summarized some views on the quality management system and quality management competences.

The implementation of Total Quality Management (TQM) is a participative management approach. It involves a decision to change the mindset of people from existing quality improvement practices to enhanced quality awareness, education, training, involvement, communication, skill upgradation and problem-solving attitude. It focuses on laying the foundation of quality improvement with emphasis on zero-defect programs, quality control circles, motivation programs, developing mission statements, establishing objectives and practicing quality tools and techniques. It demands an unprecedented top management commitment for initiating quality improvement activities as top management plays a significant role in emphasizing commitment of employees, customers and suppliers. (Ramanand, 2015)

Each company involved in the TQM process, regardless of its level, is encouraged to create a strength-weakness profile through a regular assessment of the company's performance, which will allow it to mitigate deficiencies and initiate action to secure long-term competitiveness are indispensable. (Rothlauf, 2014)

Total quality management is the organization's philosophy, a way of thinking about the organization's objectives, organizations, processes and people. Successful interaction between the "organizations culture" and "quality management" is a key factor in the achievement of the organization's performance excellence. (Lapiņa et al., 2015)

With regard to the external benefits, Integrated Management Systems can enable small and medium firms to achieve a competitive advantage, to eliminate the possibility that competitors with innovative strategies to overtake company's activities. The organization must design, implement and maintain an integrated management system focused on customer satisfaction and fulfilment of all stakeholders' expectations. In designing such a well-structured and effective system, emphasis should be placed on identifying existing or potential problems related to quality, environment, health and occupational safety, and on implementing required preventive and corrective actions. (Olaru et al., 2013)

The most significant factor that affects the quality of performance management is the people; i.e. employees skills necessary to consistently review and modify performance management system as well as senior management commitment. The other factors of relevance reported by the companies included monitoring of processes, their measurement and transmission of information by modern information technologies and costs. (Jelinkova & Striteska, 2015)

The Competence Management Tool (CMT) is an instrument to measure competences and to support small and medium-sized enterprises in conducting requirement analyses of relevant personnel competences. SMEs have to cope with different challenges concerning competence management. To implement a strategic oriented competence management, not only manageable and valid instruments to measure competence development requirements are needed. The CMT can help to support the implementation of the competence management process. (Decius & Schaper, 2017)

Quality requires a cultural transformation of management and not a week of interesting seminars; a lot of work; knowledge and solid methods; rigorous tests and experiments, intellectual honesty, and cooperation. The commitment to quality is not sufficient and we need the managers' quality because quality means satisfying the clients' needs and not the clients' satisfaction. We need the managers' quality- for each decision undertaken- rational managers who substantiate the decisions, the prevention and the environment, taking into account the future consequences on the needs, client, the user, and the society. (Rusu, 2016)

The following process can be drawn for complex organizations management. Paying more attention to that and decision-making process, it can be more specified with FOCUS headword:

- F (find): find the problem. Whether complexity is felt or not?
- (organizing): organize a team to investigate the causes of complexity and identify solutions for problem.
- C (clarity): clear the problem solution by discussing the solutions.
- U (understand): improve your understanding and knowledge by selecting a solution.
- S (solution): manage the complexity with the implementation and evaluation of activities (Daryani & Amini, 2016)

Since industrialized economies have shifted from natural resources to intellectual assets, knowledge management has become a key issue. The dynamics of faster product development set new expectation standards and traditional managerial attributes are being revised to improve firm's competitiveness in this new environment. (Akdogan & Demitras, 2014)

We agree with the opinions expressed in various studies (Lapina et al., 2015; Hyväri, 2016; Dickel & de Moura, 2016; Saadat & Saadat, 2016; Herliana, 2015; Zehir et al., 2011), that essential conditions and strategic tool for gaining competitive advantage and stabilizing organizational success are organizational culture management, innovation and knowledge management as well as organizational project management, especially in small and medium businesses. All these conditions must be taken into account to developing a quality management system for the company.

## 2. Methods

The following research methods were used: the monographic method - gathering information about the specific problem, also based on the literature review, determining the role of quality management in the development of business activities and ensuring efficiency; analytical method: analysing the research issues, main aspects of the quality management; comparative research - to analyse the activities of companies in relation to the quality management system and competences of quality managers; social research method - panel discussion and expert interview methods that enable acquiring a clear view of the situation.

In order to gather information on the specifics of quality management in Latvian enterprises and problems faced a panel discussion was organised. The panel discussion was attended by 10 entrepreneurs with long-term business experience in the Latvian market. The questions raised during the panel discussion were designed to ascertain the entrepreneurs' vision of quality management processes in small and medium sized companies in Latvia, the challenges and possible solutions that would enable the development of quality management competences as an instrument for enhancing efficiency.

In addition, expert interviews were conducted to ascertain the specialists' vision of the specifics of quality management processes in Latvian companies and the competence of quality managers as an instrument for improving efficiency. Specialists from various fields were invited to participate as experts: members of the Latvian Association for Quality, heads of large companies, the management of the Association of Accountants, the board of the Direct Marketing Association.

The following questions were explored during the discussion:

1. Quality management tools ensure the sustainability and operation of enterprises in the international environment.
2. The competence of top level management is the key to ensuring effective quality management.
3. Quality management system encompasses all areas of operations of the organization.

## 3. Results

The research results could be summarised as follows:

1. **SME owner** - a business owner who owns more than 50% of the shares/voting rights. The owner or manager (if one person) usually has no time to engage in business development, as most of his/her time is spent on resolving day-to-day problems (a small business manager usually resolves all kinds of issues: financial, sales, advertising, etc.). The management of SMEs is most likely involved in resolving issues rather than

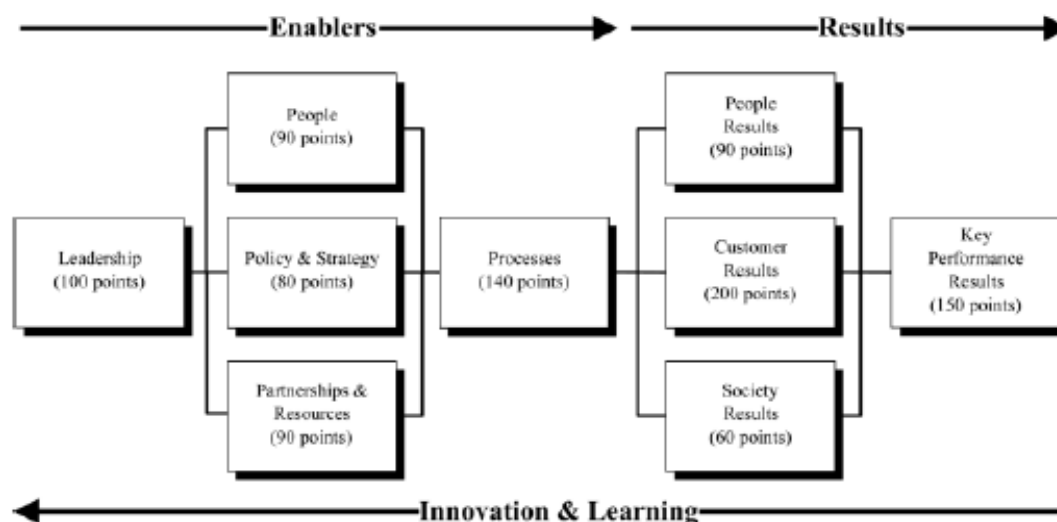
anticipating and planning solutions. The Quality department manager is the advisor, quality process coordinator and initiator of change.

2. The quality management system comprises **four main areas** of organization that need to be harmonised for *effective* management of the organization:

- corporate responsibility - policy, objectives, planning, quality management system;
- enterprise resource management - human resources, information, equipment
- process management - production, design, order processing, customer satisfaction;
- measurement, analysis and development - audit, process control.

The Excellence Model – EFQM was used as the basis for the research and the quality management in the various organisation spheres and their interaction can be illustrated as below in the Fig. 1.

Figure 1: Excellence Model (EFQM)



Source: EFQM, (2017).

The abovementioned spheres in Fig.1. are integrated into the ISO standard as requirements for the organization and are based on Total Quality Management Model principles (TQM).

The research found that top management carry out the assessment of the company based on the Excellence Model criteria.

3. The position of Quality manager (regardless of the title) must be clearly illustrated on the company's organizational structure. The quality manager must be independent of any influence or conflicts of interest that might affect the quality of his/her work.

Summarizing the results of panel discussions and expert interviews the following could be identified as the **most important competences** of the quality manager:

1. A quality management practitioner must have a sound knowledge of the basics of business management. This includes knowledge and skills in a number of spheres - the ability to assess the usefulness of inventory purchasing, accounting and the ability to make purchasing decisions. This does not mean that each quality manager should be an accountant and understand double entry principles, but he/she should be able to operate in the particular accounting system. This means understanding the core costs and how

the organization's accounting system is integrated into the enterprise resource planning system.

2. The quality manager must understand how the particular industry works. The quality manager who is tasked with improving the restaurant's service has to understand the restaurant sector, the principles of preparing food, taking orders and should have an idea of how to ensure a positive customer experience. In turn, the quality manager in a manufacturing company should understand how parts are produced and how raw materials are used. This, of course, does not mean that the quality manager of a mechanical workshop needs to be a metallurgist or a technician, but should at least have an understanding of metal processing principles and material properties. This is especially important when switching from one industry to another - the automotive industry's ISO / TS 16949: 2009 standard is not the same as the AS9100 Quality Management of the aviation industry or the ISO 27001 standard.
3. Quality management practitioners must be proficient in the use of professional tools. Knowledge of a number of quality management tools is essential in order to be able to fully fulfil the responsibilities of a quality manager and retain one's job. Overspecialized quality manager may face difficulties in suddenly finding a new employer.
4. Process management assessment. This is particularly relevant to quality managers trying to improve production processes or to describe the service delivery process. The ability to identify and understand the structure of the system is essential. Unnecessarily changes/cuts in processes could lead to catastrophic consequences especially if they are critical. If changes in processes are necessary, it is important to be able to identify the parties involved and understand their needs in the particular process. The process could be more than what is described in the formal instructions. For example, the process of a manufacturing company could be viewed from the time the offer is made to customer till the payment of the invoice upon receipt of the order by the customer. Such a process could last for years if the contract includes a service maintenance service. A quality manager cannot manage all of the company's processes immediately upon starting a new job, but he/she must have an understanding of what the process is and how the process is being analysed.
5. The quality manager must have an understanding of the scientific methodology. This does not mean that the quality manager should be able to carry out experiments similar to physicists, but the quality manager should be able to interpret the data as well as to hypothesize. Decision making should be based on data and the quality manager should be able to evaluate the data similar to the ability of a physicist to carry out experiments.
6. The knowledge of deviations is essential. This knowledge includes statistics, the use of statistical process control and the analysis of measurement system. The quality manager must be able to perform more than just statistical calculations. Quality managers need to understand the process from the deviation perspective. For example, if a high standard deviation has been identified in each of the five parts of a product specification, it may be an indication that inappropriate parts will be produced during the manufacturing process.

An understanding of the consequences alone is not enough - the quality manager must be able to convey the information regarding the deviation to both the technician as well as the management to persuade them to take appropriate action. Therefore, knowledge of leadership and motivation is also essential.



In addition to motivation and leadership skills, quality managers must be able to build a team. This is easier to implement if they have a strong knowledge of psychology. Acquiring all the seven qualifications may not be practically attainable. However, if a quality manager wants to be successful in his career, some level of knowledge in the above fields is necessary.

#### 4. Conclusion

In general, when a company operates based on excellence quality model criteria and continuous enhancement and development of the system, it is reasonable to assume that the company would be sustainable in its operations. The results of the research indicate that the top management of the company should know the basics of business management, understand the scientific methodology, be able to process the data, identify the deviations, and build a team. In turn, if the productivity of the company is increased, resources optimized and sustainable competitiveness achieved, it means that the company's resources are being efficiently managed. It is planned to further pursue the research in the future to create the appropriate solutions necessary for developing the competences of quality managers.

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## DETERMINANTS OF MINIMAL AND OPTIMAL CHARGES OF REGIONAL RAILWAY INFRASTRUCTURE

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**Abstract.** Globalization brought the many changes in the transport market. The market of railway transport services in the EU and Slovak Republic had to adapt to globalization trends in the different areas. One of these areas is charging of railway infrastructure. The basic principles of charging are governed by the Directive of the European Parliament and of the Council which establishing a single European railway area. However, it is used different charging railway infrastructure models in European countries. The models differ in method of fixed costs financing of railway infrastructure manager, i.e. the costs which are not related to train ride directly. In The Four Railway Package “The Commission is proposing to amend the Directive establishing SERA to ensure that infrastructure managers can perform all functions needed to run the infrastructure in an optimised, efficient and non-discriminatory manner.” Inasmuch as it is needed to establish such a system of charging railway infrastructure which will increase competitiveness of railway transport as well as will use public resources effectively. The paper deals with proposal of minimal and optimal determinants of charging railway infrastructure which could contribute to increasing of competitiveness of railway transport in the transport market by using different charging elements (such as rates, coefficients, bonus-malus system). Determinant are proposed so that total revenues from charging of railway infrastructure will be higher than variable cost of railway infrastructure manager and railways companies will motivate to greater use of railway transport. Thus, claims to the state budget could be reduced indirectly.

**Keywords:** costs, determinants of charging, infrastructure manager, public resources, railway infrastructure

**JEL Classification:** G38, R40, R48

### 1. Introduction

Regional railway infrastructure is an important part of the railway network in all European countries. The share of regional railway line is 38% in the Slovak Republic and 48% in the Czech Republic. Regional rail serves as a backbone for local public transport (mainly commuter transport) in many countries around the world but has to compete with private cars and lower cost bus services. However, this rail market segment is also one for which existing rail infrastructure right-of-way is not used according to its potential for supporting more sustainable land use and transport policies. These services are mostly operated under public service contracts and they may share or not the infrastructure with mainline traffic. What is mostly at

stake is an improved coordination with other public transport services (ticketing, information to passengers, etc.) and in regional mobility strategies whilst maintaining the “traditional” rail strengths, i.e. resilience, energy saving and capacity for mass transit. (Shut & Wisniewski, 2015) The change of railway infrastructure charging is another possibility to improve using of regional railway line by freight transport mainly in the industrial agglomeration.

## 2. Methods

The basic principles of railway infrastructure charging are listed in Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area. Charges should be differentiated according to the services which infrastructure manager provide in three categories:

- the minimum access package and access including track access, shall be given to the following services facilities, when they exist, and to the services supplied in these facilities,
- additional services and
- ancillary services. (Directive 2012/34/EU)

The charging framework shall establish member states of the EU, it is based on different models. In the many countries the charging framework is based on marginal costs. (Sternad et al., 2017) With respect to change of infrastructure manager costs, knowledge about the marginal costs and other conditions it is needed change the charging framework. (Odolinsky & Nilsson, 2017) EU member state can differentiate charges fees by track category, freight and passenger transport. (Abramovic et al., 2016) Also charging system should allow to take into account environmental aspect. For example, can be introduced lower fees for local track which provide access the logistic centres to rail network. (Zahumenska & Gasparik, 2017) The aim is to encourage a modal shift towards railway, considered as one of the key factors for the development of a more sustainable European transport system. (Rotoli et al., 2016) Railway infrastructure charging fees in one of the important determinant of the EU transport market which can contribute to sustainable transport. (Bukova et al., 2016) Therefore, it is needed to know a detailed and serious cost calculation. Track Access Charges must be calculated on a much more detailed level in order to cover the goals defined by the cost-by-cause principle and a non-discriminatory access to railway infrastructure. (Marschnig, 2016) Traditional difficulties on estimating those costs lie on the important data requirements of any of the methodologies to be applied. (Franklin et al., 2013) It is important to find appropriate charging system which will reflect costs of infrastructure manager, possibilities of the state budget as well as requirements of railway undertakings.

Charges fees should be reflected a clear relationship with costs (transparency) and charges reflecting the quality of the infrastructure manager's service. (Calvo et al., 2014) The charging framework should allow compensation between infrastructure manager and passenger and freight operators. (Lalinska et al., 2015) Moreover, charging fees should allow using different fees for different train category in international and domestic transport. (Zitricky et al., 2017) This can be achieved by more detailed structure of railway charging system, which take into account not only track and station category but also other factors such as overload capacity, important the track from the safety and environmental point of view, sustainable transport system in the region etc.

### 3. Comparison of railway infrastructure charging in selected European countries

The rail infrastructure charging framework of EU countries must be published in the web of infrastructure manager. All EU members published document "Network Statement" where are presented access condition, requirements of infrastructure capacity allocation, provided services, system of charges and other information about railway network. In this chapter we describe only the fees which depend on line category.

#### 3.1 Germany (DB Netze AG)

DB Netz AG offers the Applicant or the involved RU mandatory services, additional services and ancillary services. The charge of mandatory services depends on train kilometres and the following components:

- usage-based components – is determined by the train path product and the route category (fess are showed in table 1);
- performance-based components - offers incentives in order to reduce disruptions and enhance the efficiency of the route network;
- noise-based components - the noise-related impact is taken into account in that "noisy" freight trains must pay a surcharge in addition to the train path charge;
- other charges components - the train path price for rail freight services includes a charge based on a rake gross weight of less than 3,000 tonnes. Additional charges are levied as a load component for trains weighing more than 3,000 t. (DB Netz AG, 2017)

Table 1: The fees of mandatory services – based components in the DB Netz AG

Route category	Signification	Fee in €/train km	Route category	Signification	Fee in €/train km
Long distance line	F plus	9,97	Feeder line	Z 1	3,11
	F 1	5,09		Z 2	3,21
	F 2	3,53	Urban rapid transit line	S 1	2,02
	F 3	3,17		S 2	2,70
	F 4	3,06		S 3	3,21
	F 5	2,25			
	F 6	3,01			

Source: Processed by DB Netz AG, (2017).

Calculation train path price is the multiplication line category base price and train path product factor. A multiplier product factor is used in the train path price to take account of the usage-based component. Together with the costs caused by customer requirements, each train path product also takes account of the impact of the charges on the competitiveness of the Applicant and involved infrastructure use. DB Netz AG provide incentive discount on the basis of support the line with lower utilization. (DB Netz AG, 2017)

#### 3.2 Poland (PKP Polskie Linie Kolejowe s.a.)

PLK provides services of the minimum access to railway infrastructure involving services, access to facilities connected with train service and provide this service, additional and ancillary services and other services, not included in Network Statement which are carried out and billed on the base of separate contracts and submissions. Minimum access to railway infrastructure includes:

- consideration of applications for train path allocation;

- preparation annual train timetable according to applications for train path allocation submitted and agreed by railway undertakings;
- right to use of railway infrastructure according to allocated train paths;
- use of railway infrastructure within the scope necessary to execution of train journey, according to allocated train path or on alternative path, appointed on account of technical operational situation;
- access to traction network facilities, if they are available;
- traffic control and management. (PKP Polskie Linie Kolejowe s.a., 2017)

Basic charge is calculated as sum of products of train-kilometres, for train type according to allocated train path, and unit rates relevant for category assigned to railway lines sections and total gross weight of a train. Table 2 and table 3 show the selected unit rates of charge for passenger and freight trains by line category, gross tonnes of train and electrification.

Table 2: Selected unit rates of minimum access to railway infrastructure for passenger train - PKP

Total gross weight of train in tonnes	Category of line/unit rate in zł							
	Not electrified			Electrified				
	1	2	3	1	2	3	4	5
M<60	2,09	3,05	4,16	2,57	3,59	4,80	6,83	8,33
60≤M<120	2,31	3,29	4,43	2,79	3,83	5,07	7,17	8,74
120≤M<180	2,61	3,62	4,81	3,09	4,16	5,44	7,65	9,31
180≤M<240	2,95	3,99	5,23	3,42	4,53	5,86	8,19	9,96
420≤M<480	4,28	5,45	6,90	4,76	5,99	7,53	10,31	12,49
600≤M<660	5,35	6,62	8,23	5,83	7,16	8,87	12,01	14,52
840≤M<900	6,67	8,07	9,89	7,15	8,61	10,52	14,11	17,04

Source: Processed by PKP Polskie Linie Kolejowe s.a., (2017).

Table 3: Selected unit rates of minimum access to railway infrastructure for freight train - PKP

Total gross weight of train in tonnes	Category of line/unit rate in zł							
	Not electrified			Electrified				
	1	2	3	1	2	3	4	5
180≤M<240	2,95	3,99	5,23	3,42	4,53	5,86	8,19	9,96
300≤M<360	3,69	4,81	6,16	4,17	5,34	6,80	9,37	11,37
480≤M<540	4,67	5,88	7,38	5,15	6,41	8,02	10,93	13,23
1000≤M<1100	7,69	9,19	11,16	8,16	9,73	11,79	15,73	18,97
1900≤M<2000	12,58	14,55	17,27	13,05	15,09	17,90	23,51	28,26
2800≤M<2900	17,50	19,96	23,43	17,98	20,49	24,06	31,35	37,63
3000≤M	18,21	20,73	24,31	18,69	21,27	24,94	32,47	38,97

Source: Processed by PKP Polskie Linie Kolejowe s.a., (2017).

For the stipulation of the gross weight of a train, the weight of the locomotives is assumed according to allocated train path. In case of journey using alternative route caused by PLK, is determined in accordance with a route planned in timetable or for alternative route if its cost is lower than cost of planned route. (PKP Polskie Linie Kolejowe s.a., 2017)

### 3.3 Austria (ÖBB-Infrastructure AG)

ÖBB-Infrastructure AG provide the services by Directive 2012/34/EU. Train path and Train run minimum access package is composed of base charges and reduction/supplements (qualitative and route specific parameter). Base charges depend on train kilometres and gross-tonne kilometres. Charges depended on train kilometres are differentiated by:

- traffic type:
  - loco trains,
  - passenger trains,
  - freight trains (long – distance single wagon load traffic, short distance single wagon load traffic, other freight trains);
- route category:
  - Brenner line,
  - West line,
  - other international line,
  - other main line,
  - secondary line. (ÖBB-Infrastructure AG, 2017)

Table 4 shows the unit rates of the minimum access package by traffic type.

Table 4: Unit rates of the minimum access package - ÖBB-Infrastructure AG

Traffic type	Category of line	Factor	Fee in € /train km
Passenger trains	Brenner line	$Z_{pB}$	3.7244
	Secondary line	$Z_{pE}$	1.1073
	Other international line	$Z_{pSiA}$	2.0652
	Other main line	$Z_{pSK}$	1.5073
	West line	$Z_{pw}$	3.0521
Freight trains	Brenner line	$Z_{gB}$	2.4527
	Secondary line	$Z_{gE}$	0.7291
	Other international line	$Z_{gSiA}$	1.3601
	Other main line	$Z_{gSK}$	0.9926
	West line	$Z_{gw}$	2.0100
Long-distance freight trains	Brenner line	$z_{wfvB}$	2.1461
	Secondary line	$z_{wfvE}$	0.6380
	Other international line	$z_{wfvSiA}$	1.1901
	Other main line	$z_{wfvSK}$	0.8685
	West line	$z_{wfvw}$	1.7587
Loco trains	Brenner line	$z_{dB}$	2.4527
	Secondary line	$z_{dE}$	0.7291
	Other international line	$z_{dSiA}$	1.3601
	Other main line	$z_{dSK}$	0.9926
	West line	$z_{dw}$	2.0100
Fee by gross tonne-kilometres		$b_{tk}$	0.001268

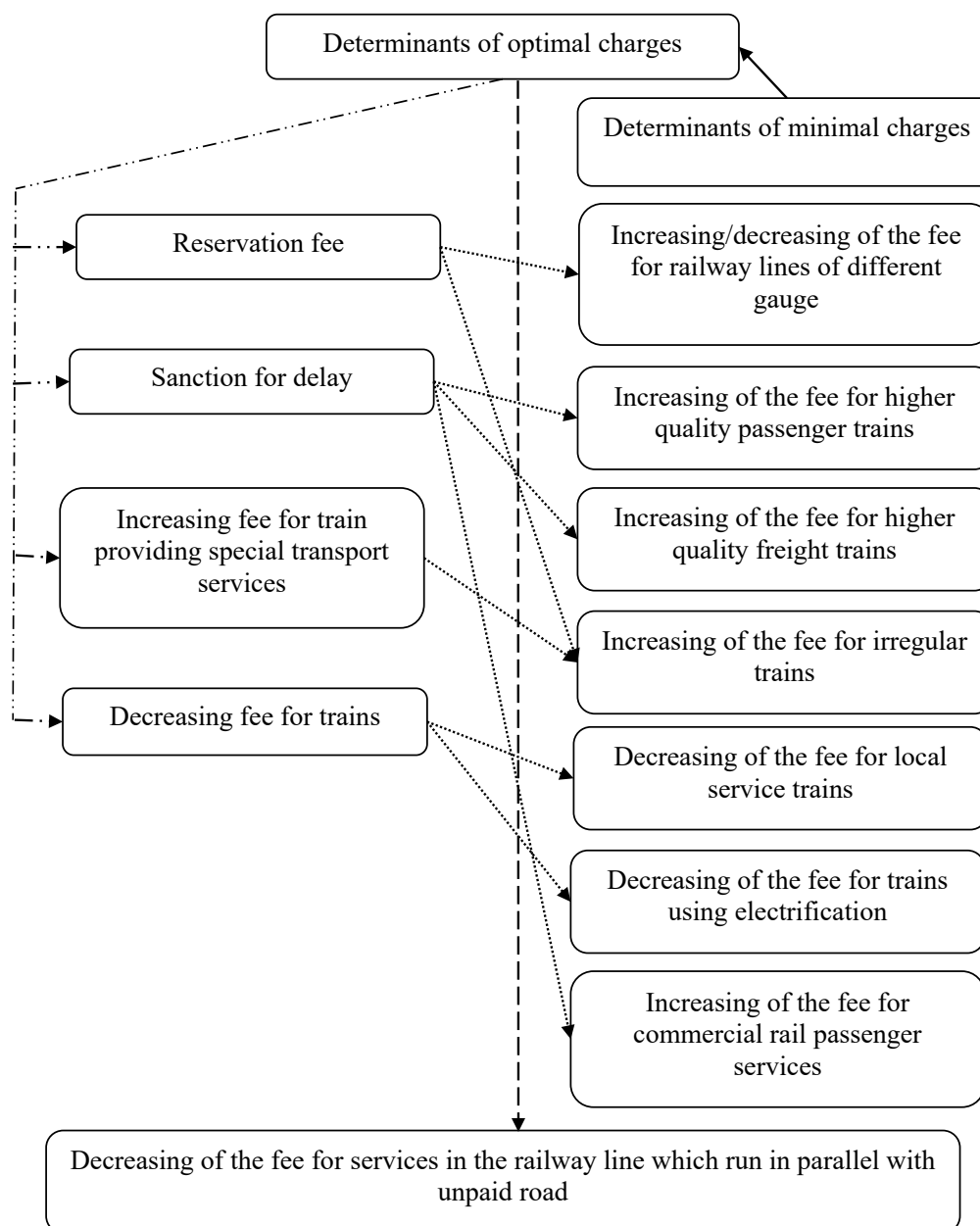
Source: ÖBB-Infrastructure AG, (2017).

Within the framework of path allocation, a specific traffic type is allocated to track capacity ordered through ÖBB Infrastruktur AG. This allocation is then made by ÖBB-Infrastruktur AG according to the train class. (ÖBB-Infrastructure AG, 2017)

## 4. Results and discussion

Every EU member countries have to implementing the Directive 2012/34/EU in to the national law but this Directive make it possible to great variability of railway infrastructure charging. Based on analysis of railway infrastructure charges in the EU countries, we suggest determinant of minimal and optimal charges. Figure 1 describe the determinant of optimal charges and relation between them.

Figure 1: Determinant of optimal charges



Source. Authors

Determinants of minimal charges should cover variable costs of infrastructure manager caused by train ride. Determinants of optimal charges take into account in addition to the category of line different train category, services, utilization of railway line etc.

## 5. Conclusion

The charges fees of regional railway infrastructure are different in the EU countries. Regional railway line is usually included in the lower category of line but it exists many factors, which can reduce or increase these fees. These factors such as ways of their application are also different. In our research we tried to find the unified system of railway infrastructure access charges based on the same reducing/supplements factors in every EU member countries with



varying the amount of the fee. Supported determinant of minimal and optimal charges (rates, coefficients, bonus-malus) of railway infrastructure can increase not only effectiveness of infrastructure manager but also railway operators and contribute to the sustainable transport system in the end.

### Acknowledgment

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## PROSPECTS FOR DEVELOPMENT OF INTERNATIONAL CROSS-BORDER TRANSPORT INFRASTRUCTURE

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**Abstract.** The article deals with the issues of development of cross-border transport infrastructure in the region and its influence on the processes of globalization. The article analyzes the state of the cross-border transport infrastructure of the Russian Federation, the dynamics of its development, its ability to integrate into the global transport infrastructure. It's analyzed the availability of the necessary terminal complexes and roads. Transport infrastructure investment is projected to increase at an average annual rate of about 5% worldwide over the period of 2014 to 2025. Roads will likely remain the biggest area of investment. Transport, for example, plays a key role in linking consumers and producers, and integrating markets by facilitating exports and imports. Improving transport infrastructure, logistics and cross-border trade facilities is central to reducing delivery times and costs, and therefore for the integration processes. For regions which are short on transport infrastructure, especially for landlocked regions, this is particularly important. Large -scale development of transport networks will likely continue in many Asia-Pacific economies, given the shift in economic power from the West to the East. In this regard, it is necessary to intensify the development of transport infrastructure to create the conditions for integration into the global transport system between the east and west.

**Keywords:** cross-border transport infrastructure, multimodal transportation, regional integration and development, transport contribution to the globalization, regional logistics system

**JEL Classification:** R4, R53, L92

### 1. Introduction

The role of the transport component of the economic and social development of the country is great. The competitive ability of the country of the national economics and the quality of life depend on it. The geographical characteristics of the country determine the priority role of the transport component in competitive advantage development according to the general integration into the global processes of the world economy. By the projections of experts, transport infrastructure investments will grow with annual average about 5% in the whole world since 2014 till 2025. (Coulibaly & Thomsen, 2016)

In all probability, roads will be the biggest sphere of investments. Transport, for example, plays the key role in connection consumers and producers and the integration of markets by the

facility of export and import. The improvement of the transport infrastructure, logistics and cross-border trade objects has a fundamental importance for the reduction of terms and costs of the delivery, and consequently, for the integration processes. It is extremely important for regions which haven't enough of the transport infrastructure, especially for region which haven't ways to the sea. The large-scale development of transport nets in many countries of the Asian and Pacific region including China amplifies the priority development of the transport system between the East and the West. (Li, 2016)

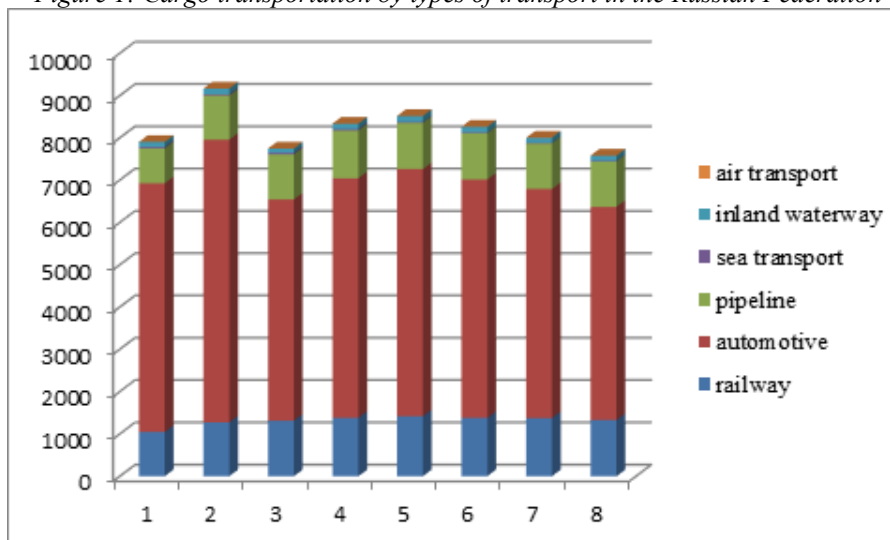
## 2. The development of the cross-border transport infrastructure in the Russian Federation

The modern economical and social development of the Russian Federation is unthinkable without wide international economic, cultural and humanitarian links with special countries which have common historical roots with Russia, as well as with countries of the whole world. Making such links includes crossing the national border of Russia which is 61 thousand of km in length. Its main functions are making a barrier, contact and filtering function.

Russia borders with 16 countries in the land and the sea. The most part of territorial entity of the Russian Federation are bordering. And more than 13 thousand of km of borders is new.

The cross-border infrastructure is the conjunction of objects and technologies in the sphere of transport and related sectors, security systems, connection systems and telecommunications including protected snooping which are in the border space of Russia and neighboring countries. (Blyde & Molina, 2015)

Figure 1: Cargo transportation by types of transport in the Russian Federation

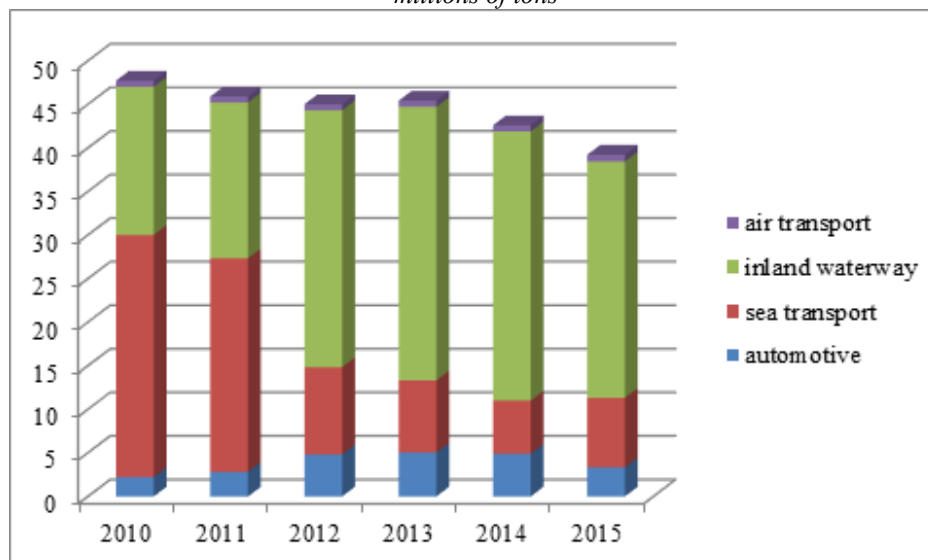


Source: Federal State Statistics Service

The characteristic of the cross-border infrastructure is the technological commonness but different state accessory of its elements. Objects of cross-board infrastructure include automobile roads, railways, airports, sea and river ports which make international cargo and passenger connection. (Iannone, 2012) The special meaning in the system of cross-board infrastructure has checkpoints of the state border. They are the key link in the transport connection between states. (Hasan, 2008) Checkpoints are the complex modern specialized systems connected with transport objects. (Pietz & Becker, 2016) They allow making the

government control on the border for community and state safety. Also they are corridors for the international transport communication. (Veenstra et al, 2012)

Figure 2: Cargo transportation and cargo turnover in the international connection by types of transport, millions of tons



Source: Federal State Statistics Service

Let us watch the modern condition of the transport infrastructure in the Russian Federation and make the analysis of its future development.

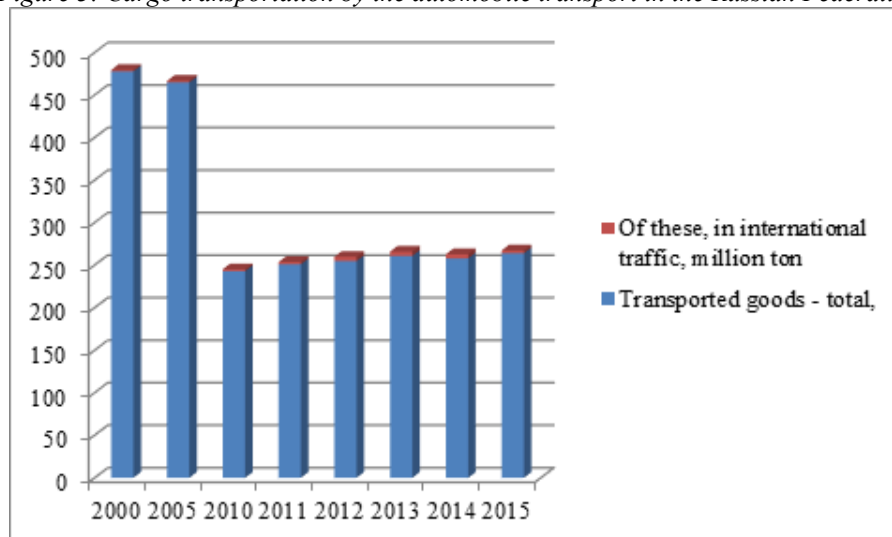
The automobile transport is the main transport in the Russian Federation for cargo transportation on the territory of the state. The inland water transport is the main transport for the international connection (Fig.1). Automobile transport for the international moving is on the 3rd place after the inland sea and river transport (Fig. 2). The volume of international moving of cargo is growing.

The average transportation distance of one ton of cargo with automobile transport in the Russian Federation is 46.1 km. According to the RSC in 2015 the cargo transportation by the automobile transport is 264 millions of tons (Fig.3). 3.33 millions of tons is for the international connection. It is 1% of all cargoes transported by automobiles.

As we see the dynamics of the cargo turnover by the all types of transport is stable. The decreasing in 2014 and 2015 is the exception from the rule. It was connected with the imposition of sanctions by the Western countries against the Russian Federation. The transport flows were reformed by evasion of some countries to the other countries because of the import substitution and changing the connection with some partners.

According to the transport strategy of the Russian Federation for the period up to 2030, the main problem is technical and technological weakness of the transport system of the Russian Federation in comparison with developed countries. (Bilovodska et al, 2016) It is not ready to general using of modern technologies, primarily –container transportation. The growing demand for cargo transportation is restrained by the undevelopment of the transport and logistics system of the country. The transport and expeditionary service of people and economics is low. Technical and technological data of international transport corridors don't provide its' competitive ability on the international market. (Doumouras et al, 2016)

Figure 3: Cargo transportation by the automobile transport in the Russian Federation



Source: Federal State Statistics Service

So there are next tendencies of the transport service market which should be taken into account while the development of the cross-border transport infrastructure of the Russian Federation (Bychkov et al, 2016). There are: transport processes and logistics began to integrate (Jarašūnienė et al, 2016); the conception of transport corridors has transformed; the quality of transport service and the competitive ability are of the high level of development; the development of container technologies of the cargo transportation, the creation of container terminals and transport and distribution centers (Mun & Nakagawa, 2010); the development of the international transport corridors. (Xiu, 2013)

So the realization of projects for the cross-border transport objects development will allow creating the conditions for growing the cargo and passenger transportations, promotes the realization of business-models on decreasing time and cost. Also it will have the multiplicative effect in future.

### 3. The analysis of the cross-border infrastructure of the Voronezh Region

The Voronezh Region is the biggest regions in the Central Black Earth Region in territory, population and the economical potential: the total area is 52.4 sq. km.; the population is 2,270.4 thousand people. The Voronezh Region is located in the transport network node and has borders with six territorial entries and the Ukraine.

The Voronezh Region has good economical and geographical location in the center of the European part of Russia: next to industrial regions of the Russian Federation and CIS countries. The region is on the crossing of directions of two transport corridors – The North - the South and the West – the East. So the Voronezh Region is some kind of the bridge between Europe and Asia providing forming and servicing of transport flows in the ITC the North – the South and in the direction the Western China – the Western Europe.

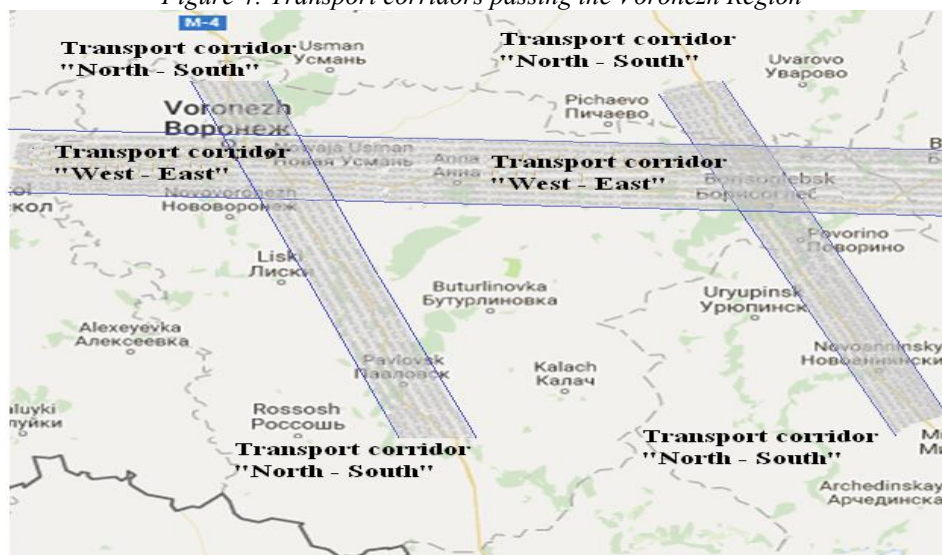
The development of transport flows which pass through Voronezh and the Voronezh Region determined by the geographical location of the region:

- convenient geographical location of the City – the federal highway and equivalent transport leg *Rostov-on-Don – Voronezh – Moscow*;

- developed transport infrastructure of the region is presented by big highways (M4, M6, A144, 1P193), railways (they provide the connection in three directions: Moscow, Rostov-on-Don and Kiev); air transport: international airport of Voronezh realizes regional and international flights; the river transport (the river port in Liski).

International transport corridors *The North – the South* and *The West – the East* pass the region (fig. 4).

Figure 4: Transport corridors passing the Voronezh Region



There is a net of railway and automobile stations, cargo sites, A, B+, B class storages. Twenty transport and logistics companies work on the territory of the region. The geographical location of Voronezh allows it to become the distribution center, double transit node for the southern and south-eastern regions bypassing Moscow. In future Voronezh which is in the point of crossing of three federal regions and has the direct way to the border can become into the big transport and logistics node connecting the center of Russia, the northern Caucasus, the Ukraine and the Siberia. (Chirkov et al, 2016)

More than 70% of volumes of intraregional cargo transportation and more than 90% passenger transportations are made by the automobile transport. The auto transport park of the Voronezh Region has grown for 5-7% in a year. Besides traditional transportations for distance up to 300 km, transportations for long distances began to develop. That is why well-developed road and transport infrastructure can make geographical features of the Voronezh Region into its competitive advantages.

Transport flows which pass through the Voronezh Region nowadays can be divided on intraregional, trans-regional transportation and import and export flows. In turn, the last ones can be divided on:

- import cargo flows which go from Moscow, Saint Petersburg and from the port of Novorossiysk for distribution in the Central federal district;
- export cargo flows of entities of the Central federal district including ones transporting by the sea from the port of Novorossiysk city;
- import and export cargo flows from the Ukraine and Kazakhstan passing the international transport corridor *The West – the East*: Ukraine – Kursk – Voronezh – Borisoglebsk – Saratov – Kazakhstan.

Besides the work in widening the international transport corridor *The West – the East* is made for account of export and import transportation flows from China.

The development of auto and air transportations can influence to the development of inter-modal cargo transportations in the Voronezh Region. Nowadays the international airport Voronezh has developed multi-modal infrastructure which allows to reduce costs for cargo transportation. This was made due to making the airport as the cargo logistics center for Air Company by: the increasing the number of high capacity airplanes parking; it was improved the condition of airport runway of the airport; it was provided the special equipment for on-and-off loading; it was educated the qualified personal; it was optimized the cost of service.

Industrial parks and zones work in the covering area for multi-modal transportation with the center in the Voronezh city. It was made for attracting trade and industrial capacities. Also it was made new standards for execution of transit cargoes through the airport.

The covering area of the Voronezh airport includes the territory: with population more than 7.3 millions of consumers of goods and high-technological production. 2.3 millions of them live in the Voronezh Region and 1.1 millions live in the Voronezh city.

Other subjects of the potential covering area of the multi-modal cargo transportation are the Kursk Region, the Tambov Region, the Belgorod Region, the Lipetsk region, the Bryansk Region, the Kaluga Region, the Ryazan Region, the Volgograd Region, the Saratov Region. The distance from the airport to the farthest subject is not more than 240-390 km.

#### **4. Conclusion**

Nowadays the logistics is one of the key factors of growing the production effectiveness. It is the new form of competitiveness - wins the one who controls more effectively his chains of delivery and who has more effective control model. This model will provide the flexibility and hardness to different crisis. Providing of transport system, logistics and trans-bordering trade objects has the main meaning for decreasing delivery terms and costs and consequently for international processes. So according to tendencies it is required the development of effective transport and logistics systems and technologies, safety and flexibility of transport services in cargo transportation, its adaptability to the business needs. They include such factors as volumes, speed, maturity, quality and cost.

There are two important tendencies in the Voronezh Region:

- The development of the international automobile transportations and the development of the automobile transit transportations through the region;
- The improvement of transportation technologies.

The development of the international automobile transportations and the development of the transit transportations through the region would be made by: the development of the international transport corridors infrastructure, M-4 in first turn; implementation of effective technologies for custom control for goods and vehicles; the modernization of the industrial bases of next to border checkpoints for vehicles (Bugayevka and etc.), improvement of procedures for customs control and execution according to the international practices.

The improvement of transportation technologies will be made by: the creation of the system of cargo auto transport terminals and transport and logistics centers including multi-modal distribution complexes and transport node; the creation of big transport and expedition companies which are specialized of the cargo delivery in the international communication



which is based on the terminal technologies; the creation circumstances which will be optimal for connection of the automobile transport with other types of transport including containers; the creation of informational systems for providing passing and return loading of auto transport; the realization of measure complex for cargo flows concentration in transport corridors as a required condition for increasing the transportation effectiveness; the creation of the central auto transport service system for maintaining big cargo-making objects; the improvement of the system for the informational changing, control and document flow according to international standards and regulations; the realization of measurement complex for increasing the production of specialized rolling stock for containers; the development of informational and telecommunicational provision for automobile transportation including sputnik systems.

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# THE INNOVATIVE MODEL OF "ALBERGO DIFFUSO" WITHIN GLOBALIZATION TO ENHANCE THE TOURISM COMPETITIVENESS AND ENVIRONMENTAL SUSTAINABILITY

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**Abstract.** Italian innovative business model of the *albergo diffuso* is an area development project that orients the tourists from crowded hotel facilities to townships, villages and small historic towns to enjoy of comfortable and unspoiled natural landscapes and positive image, attractiveness and enhancement of the territory. The object of investigation concerns a project of recovery and territorial enhancement realized through the *albergo diffuso* (AD) model and the network between this last and the local stakeholders for territorial development perspective. Therefore, the involvement of stakeholders in territorial decision-making process plays an important role for innovative business initiatives AD. These regard: the recovery of cultural heritage, improving the living conditions of the resident population, reduce the depopulation of rural areas at risk of abandonment, creation of jobs and income for local communities and businesses operating in the territory, development of agro-food typical products, restoration and renovation of the building stock for tourism purposes without affecting the territory and the environment. Public administration with a suitable management, good management practices, the creation and government of a heterogeneous network of participants, is the focus of the innovative model of AD, with social effects, economic, cultural and environmental at the territorial level.

**Keywords:** *albergo diffuso*, innovation model, entrepreneurial network, local development, sustainability

**JEL Classification:** L26, Q56, Z32

## 1. Introduction

The *albergo diffuso* AD is an innovative hospitality formula because the accommodation units are located in different buildings and have a unitary centralized structure and of medium-small size. The AD has origins in Carnia (Friuli Venezia Giulia region) in 1982 in order to recover for tourism, houses and villages restored after the earthquake of the seventies. (Dall'Ara, 2010)

The AD provides a lifestyle of a place, allows living as live residents, with a deseasonalized proposal for the whole year. It is an engine of development that helps to make it more interesting, the life of a place, build networks among homeowners and among producers, it stimulates the opening of small shops and essentially provides a contribution to putting a brake on the depopulation of the territories.

The main feature is to provide a horizontal instead of vertical structure model (Barbi, 2007), in which the rooms are located within the borough and not in a single specially constructed building. Also, having a unitary management in a single entity for the supplying of key services in which all the borough, characterized by its workshops, restaurants and other businesses become a part of supply accommodation that allows easy management and the possibility to offer services of hotel type. (Confalonieri, 2011b)

## **2. The potentialities of the AD model**

Although this is essentially an Italian experience, in the same period, increases in United States the phenomenon of bed and breakfast localized in neighbouring buildings that develop centralized food service, according to the inn's cluster approach. Since the nineties, particularly, is spreading the need for a sustainable tourism appropriate to the development of the environment and local communities. The AD is a response to this issue because it is able to combine tourism activities with the sustainable development of the territory and ecosystem, ensuring the preservation of the local culture.

The AD is a model of hospitality that respects the environment and the cultural identity of places, using and enhancing the existing building heritage. In other terms, through the recovery of the buildings, it allows for the rehabilitation of historic centres and rural villages. The AD is also a strategic opportunity because it represents a type of repeatable hospitality that unites, however the enterprise to the locality, thus representing a working method suitable to increase the opportunities for public-private partnership.

However, it requires commitment to the resolution of problems, sometimes thorny, due to the necessary coordination among the actors, which give rise to the initiative. The AD characteristic elements are represented by the articulation of tourist proposal, intended as a wide range of activities for guests, through integration with the building heritage and economic activities already in the territory, social relationships among guests and residents, by respecting the cultural environment and territory.

According to Dall'Ara the AD, more than any other type of accommodation, brings a large share of guests for the first time in a territory, which helps make this experience possible "engine" to stimulate tourist vocation of a territory.

However, the structures are generally more expensive to run than any other type of accommodation, providing not only rooms but also homes. On the other hand, the AD increases employment opportunities as it needs a number of managerial staff and personnel, executive and operative that promotes the economic development of rural and agricultural areas. (Dragulanescu & Drutu, 2012).

The analysis of the scientific literature has allowed identifying the peculiar aspects of AD from a theoretical point of view, but which by the examination of a case study is possible to verify effectively the characteristics that allow qualifying a structure as AD. (Androniceanu, 2017) In addition, the study of experiences allows us to deepen economic and business issues related to management of the structures that, to date, are still little studied in the literature. (Paniccia, 2012)

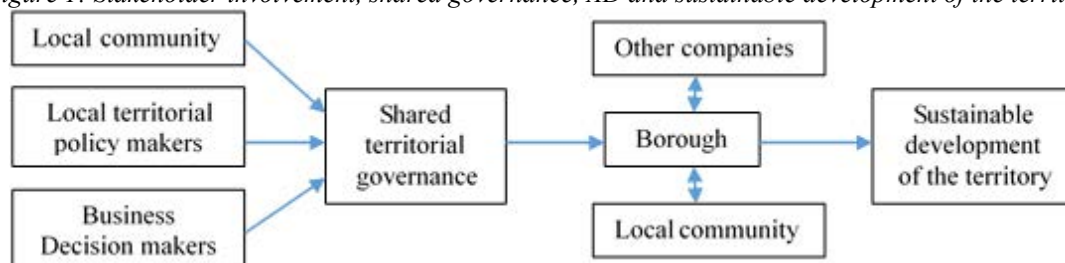
The distinctive features of AD can be identified in the relationship between tourism and sustainable development, the protection and enhancement of the environment and valorization of existing buildings, the involvement of local communities and the hospitality model. (Androniceanu & Ohanyan, 2016)

In many cases, recovery of squares, streets and areas of ancient villages, that testify the richness and complexity of public and community spaces which were formed over the centuries, make authentic the experience. (Andrei et al., 2016).

The innovation of these business solutions, which are becoming more common, occurs both in structure and in management methodologies. (Dall'Ara, 2010; Becerra-Alonso et al., 2016; LazaroIU et al., 2017a) The respect for individuals and of entire social body meets the needs and expectations, and of the residents (social effectiveness), and of the environment with the rational use of resources (environmental effectiveness). Thus, tourism becomes a decisive factor for the development of the local system. (Candela & Figini, 2010; Blesic et al., 2011; Androniceanu & Dragulanesu, 2016; LazaroIU et al. 2017b)

The AD is in fact a facility that sells, apart from its services, a territory and has many strengths identified in: a) it does not require the construction of new buildings, but recovers disused buildings or in the process of degradation; b) guarantees the respect for environment and culture of a place, recovering the historical patrimony, artistic and cultural of the smaller towns; c) it is an original hospitality model, offering greater contact with the territory and its popular traditions and folklore; d) it recreates a particular atmosphere, difficult to find in standardized contexts also because intensifies the relationship between tourists and local community, which allows visitors to feel part of the community as a temporary resident and not a stranger; e) serves as an engine for regional development in terms of sustainability, allows the revitalization of villages and town centres at risk of depopulation, attracts tourists in town otherwise unknown, providing new opportunities for development. (Besciu & Androniceanu, 2017; Popescu et al., 2017).

Figure 1: Stakeholder involvement, shared governance, AD and sustainable development of the territory

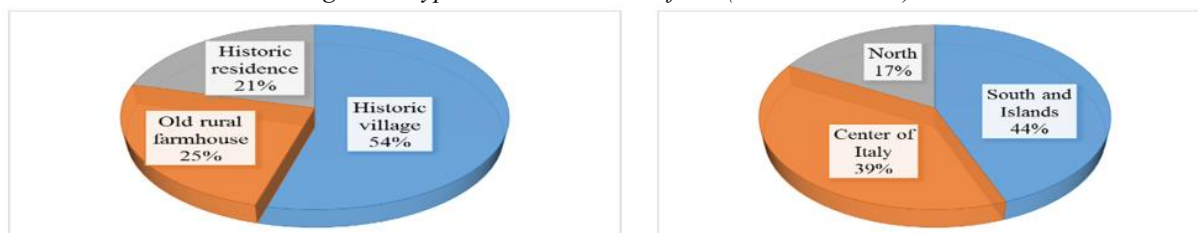


Source: our elaboration

### 3. AD in Italy

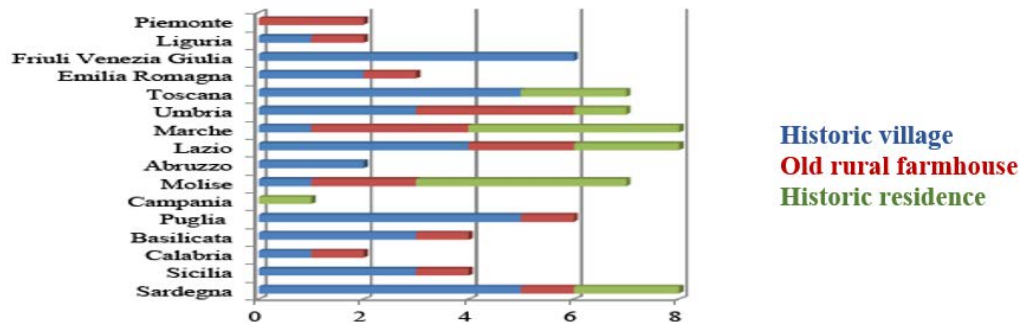
To draw a synthetic picture of the AD spread in Italy, we refer and updating studies conducted on the subject in recent years. (Paniccia, 2012) At the end of 2014 in Italy there were 92 structures AD. The majority are concentrated in central Italy and the islands, and according to a classification can be divided into three categories: hotel in historic village, hotel in a historic residence and hotels in old rural farmhouse (Fig.2; Fig. 3)

Figure 2: Types and localization of AD (December 2014)



Source: our elaboration

Figure 3: Regions and typology of AD (December 2014)



Source: our elaboration

#### 4. The survey method

The object of study is a Sicilian experience and focuses on the entrepreneurial dynamics of the strategic choices and the consequences of these in terms of performance. Furthermore, the analysis puts in relation the fundamental elements identified in the theoretical framework with the operational choices made, in order to identify any gaps between theory and practice. The research uses the case study method (Eisenhardt, 1989), already used in the literature for the investigation of aspects related to this type of hospitality. (Paniccia, 2012) The empirical investigation and objectives of the research concerned the AD in Sicily that are significantly different by category, location, and type of accommodation.

The research aims to show how diffuse hospitality represents an innovative format that meets the main determinants of the current tourism choices and the criterion of sustainable tourism development, and to identify the key obstacles for achieving the full value possible. The case analysis, conducted in a multiple perspective case, is qualitative and exploratory purposes. (Edmondson & McManus, 2007) The research was carried out in 2016 through multiple sources: scientific publications and articles; websites and databases of institutions and associations; regional regulations; interviews with business owners / managers, operators of local authorities, operators of regional and local authorities and representatives of the tourism sector organizations.

Sicily is particularly appropriate area for the development of this model of hospitality with its unique heritage of culture consists of history, art, tradition, landscape, environment and many rural villages and historic towns, often at risk of abandonment. The approach to the development of the case is typically business with a focus on the management aspects. Considering that the AD is, in the substance a company, it is essential to comply with the economic principles, efficiency and effectiveness and, simultaneously, the particular implications that the management of such an innovative company determines. These aspects surveyed according to the Sicilian regional regulations to which it is entrusted with the definition of qualitative and quantitative standards of the AD, has outline a draft served than as the theme for an interview with an administrator of the industry (Tab. 1).

Table 1: The interview outlined to the administrator. Issues

How did the idea to create the AD? History and recent evolution
Difficulties experienced in setting up
Size, organization and characteristics of the structure
Programming and Control System
Economic and Financial Performance

Source: our elaboration

The case study allows, ultimately, to trace a path for local economic development and, above all, for the analysis of the AD management, so as to constitute a useful support to actors, public and private to whom decide to adopt this form of hospitality and solve some of critical aspects, nature inherent of this model.

## 5. Results

First, the analysis shows that the investigated cases present the distinctive characters of the innovative model of AD. In fact, these are located in places of great historical and cultural importance not included in the traditional tourist mass, which still conserve intact the architectural authenticity, traditions and local atmosphere. Are configured horizontally with joints, in more existing buildings and, mainly, of culture of the place. Their offering and competitive advantage is based on a deep integration with the territory and the valorization of its specific resources (historical, artistic and architectural, landscape, food and wine, crafts, etc.). They promote itineraries, enhancing the area by restoring villages and historic buildings, so revitalizing the area by strengthening the community identity. In addition, the AD contributes to local development both by increasing employment with a consequent reduction of depopulation, either by increasing the productive agricultural activities and local craft and open a virtuous economic cycle of a spatial brand. The AD is particularly suited to the emergent trends in tourism as well as attests to the high customer satisfaction, as evidenced by leading Internet sites in the industry. Guests have the opportunity to discover unusual places that meet the environmental effectiveness principles, social and economic. The case study regarding the Sicily Region shows a high tourist satisfaction, as evidenced by the Tab. 2.

In the present study, we referred also to the matrix developed by Weaver (2011) to define the positioning of territory, object of tourist destinations, based on the regulation level of tourism development, and intensity of tourist flows incoming. The investigated realities correspond to a tourism development model characterized by content and levels in relation to these two dimensions. We found, too, that a better regulation (extremely inadequate in Sicily) would allow a development of this tourism model, typical of the exploration stage of the life cycle of a tourist destination. (Butler, 1980) Therefore, a tourist development that saturates the capacity of the AD and which weighing considerably on the local area, while being modest in relation to destinations of mass (Fig. 4). Only under these conditions, in fact, the AD and their territories can count on an appropriate amount of demand to achieve a level of economic efficiency as to ensure the sustainability of development, remaining, however, unusual destinations and not ordinary, authentic places to be discovered, that allow visitors to enjoy unique experiences.

Table 2: The state of AD structures in Sicily region

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
<b>1. Albergo Diffuso Santa Caterina - Castiglione Di Sicilia (Catania Province) License: AD</b>																					
209	8.2	218	83	61	26	7	11	43	91	3	5	24	41	69	52	26	188	40	11	0	0
<b>2. Albergo Diffuso Borgo Gallodoro, Letoianni (Messina Province) License: AD</b>																					
24	8.7	18	13	2	0	2	0	4	9	0	0	4	0	10	6	1	17	3	1	0	0
<b>3. Scicli Albergo Diffuso Scicli (Ragusa Province) License: AD</b>																					
189	9.6	306	251	31	2	1	0	44	161	5	8	44	51	135	84	15	285	34	6	0	0
<b>4. Home Hotels, Piazza Armerina (Enna Province) License: Holiday House</b>																					
14	5	5	2	1	0	0	0	2	0	0	1	0	1	0	0	2	3	1	1	0	0
<b>5. Le Case dello Zodiaco, Modica (Ragusa Province) License: B&amp;B</b>																					
47	8.8	158	115	26	2	3	1	31	71	2	2	33	37	44	42	24	147	21	4	0	0
<b>6. Ragusa ospitalità diffusa, Ragusa Ibla (Ragusa Province) License: B&amp;B Apartments for tourist use</b>																					
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>7. Resort Borgo San Rocco, Savoca (Messina Province) License: AD</b>																					
556	9.5	347	191	32	4	3	0	60	116	3	5	22	32	98	71	29	230	137	33	0	0

<b>8. Val di Kam, S'Angelo Muxaro, Agrigento (Agrigento Province) License: AD</b>																					
0	4.5	16	6	1	0	1	0	2	4	0	0	1	1	3	4	0	8	6	0	4	0
<b>9. Albergo diffuso Montalbano, Montalbano Elicona (Messina Province) License: AD</b>																					
0	0	302	159	93	34	5	3	71	98	6	2	89	73	121	66	34	294	4	0	0	2

*Note:*

Reviews and rankings - Booking.com, column 1 no reviews, column 2 rating.

Reviews of the Trip Advisor community: column 3 no reviews, column 4 excellent, column 5 very good, column 6 standard, column 7 low, column 8 very bad

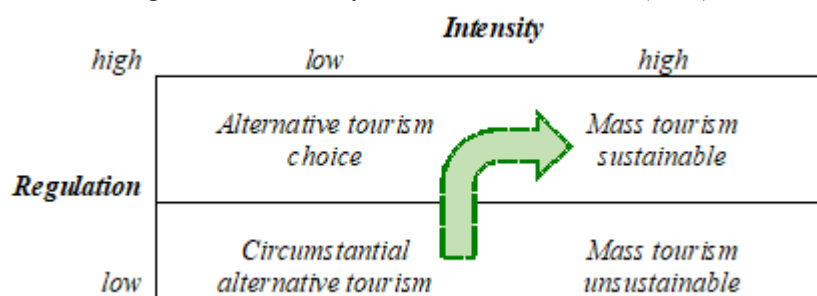
Type of traveller: column 9 families, column 10 couples, column 11 single, column 12 business, column 13 friends  
 Period of the year: column 14 March-May, column 15 June-August, column 16 September-November, column 17 December-February

Language: column 18 Italian, column 19 English, column 20 French, column 21 German, column 22 Spanish

*Source: our elaboration*

Thus, a tourism with an intensity that does not compromise the characteristics that are key choice determinants of main clusters of users of such hotels and territories. The borough of Montalbano Elicona (Messina Province in Sicily Region) was awarded a few years ago, as the best village in Italy.

*Figure 4: Evolution of AD in the matrix Weaver (2011)*



*Source: our elaboration*

## 6. Conclusion

The model of AD shows a remarkable expansion by doubling the structures in recent years. The AD model, are still in a start-up phase, but only from a few years are of interest to deepen the economic and business issues of their management even before the model from spreading further. In fact, the recovery opportunities of the many historical villages semi abandoned are still important.

The case study highlighted how the creation of a structure of this type, requiring substantial real estate investments, and the creation of an AD interprets the first years of managing, typical of a start-up business. Linking to the management, we highlight some difficulties related to the rigidity of the cost structure that characterize the Italian companies but which, however, represent a valuable driving force for the development of the territory. In business terms, the start-up phase, the AD should receive more attention from the regional and national public policies in the sense of supporting the management of these structures, using the lever of local taxes and fixed costs in order to give new life to villages at risk of abandonment.

Therefore, the AD can support the tourist vocation of a territory by offering job opportunities and attracting foreign tourists. One of the main limitations of this study is the attempt to investigate a phenomenon that is still evolving and therefore subject to different choices, both in terms of regional regulators and in operational decisions. One of the main limitations of this study is the attempt to investigate a phenomenon that is still evolving and therefore subject to different choices, from the side of regional regulations, but also in operational decisions. A



further limitation is related to the fact that the research only examines the strategic choices and the results from an economic-business perspective, leaving aside any feedback on the effective impact that such policies have produced in the reference area. The combination AD and territory must be managed as a single integrated product in a wide area.

Finally, this research limited to the Sicily Region can be enhanced in the future, through the study of further experience enabling the identification, possible management and operational best practices. Moreover, through enlargement of the case study to the local economy it is possible to identify the effects in cultural and economic terms of the activities of AD, in a broader context and longer-term.

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## THE INFLUENCE OF GLOBALIZATION FOR JOB ANALYSIS

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**Abstract.** The article describes the ways of job analysis in the companies in Slovak republic. Job analysis, that is a priority personnel activity, is the cornerstone on which every other personnel activities are built. The results of job analysis in the form of job descriptions and specifications are applied in personnel planning, recruitment and selection of employees, in the process of recruitment and orientation of new employees, in the assessment of work and work performance, decision making on personal development and training of employees, fair remuneration, in the care of employees, in work relations, in the placement of employees and termination of employment. Job analysis is a systematic process of collecting, sorting, assessment, organizing and saving information in order to obtain objective and detailed information about the content of work, work assignments and responsibilities. It provides an idea of work at workplace and thus creates an idea for the employee that should work at the workplace. The aim of the article is to describe the change in the approach of job analysis thanks influence of globalization. On the base of analysing and comparing of the surveys realized in the year 2012 and in the year 2016 will be identified the difference in job analysis. The detected gaps will be analysed a will be generated the possible root causes that could make them and will be recommend the next possible ways of development of job analysis in Slovak companies.

**Keywords:** employees, job analysis, personnel management.

**JEL Classification:** M12, M53, O15.

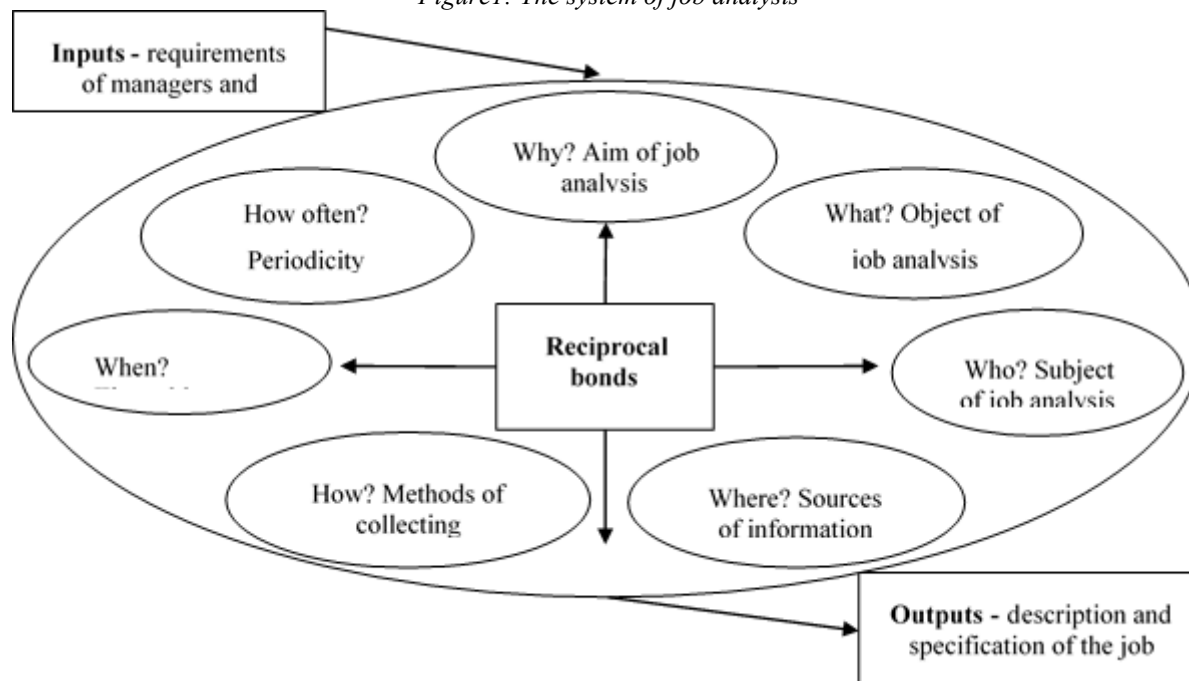
### 1. Introduction

Job analysis collects, evaluates and organizes information about individual work activities. Analysis, we mean systematic review of the selected job. This widely branched process is based on gathering and collecting information about the work, its components and features that are necessary or important for further personnel practise. Prior to reviewing individual works, knowledge about the business is also concentrated. Its input units (people, material, and workflows), its output units (goods and services) and all materials (laws, regulations and regulations) that relate to that job function are read. The information gathered and the collected knowledge needs to be sorted, analysed, critically assessed and organized according to context. After such processing, they can be summarized in a concise description of the work that provides a comprehensive picture of the work in question and is the starting point for processing the specification of employee requirements.

## 2. Theoretical background

The system of work analysis as a subsystem of personal work is an open system that influences its surroundings and at the same time operates to it. (Antosova, 2008)

Figure1: The system of job analysis



Source: Mateides, (2006).

### 2.1 Object and subject of job analysis

The subject of job analysis is to investigate the interaction of the subject and the work object. (Scullion & Starkey, 2000) The object of job research is the work done by the employee on the job, as well as the overall system of work organization. (Mihalcova, 2007) The subject of the job is the job holder.

### 2.2 Aim of job analysis

The main objective of job analysis is the processing of information obtained about the object and the subject of the job, it is work carried out at the workplace and on the job holder, in the form of a description and job specifications. (Bencsik et al., 2016; Nica et al., 2016) These documents are the most important outputs of the analysis. Du & Hao (2006) discuss the results of the analysis have an impact on: planning, creation and change of the company structure, improvement of projects and methods of work, determination of equal opportunities and performance of work, creation of working conditions, classification of work, restructuring and simplification of work, career development, preparation, to clarify the role and position of the individual in the company and a number of other activities. (Bedzsula & Kovesi, 2016; Vargas Vergara, 2007)

A job description is a systematic and detailed list of information that provides aggregate job data. It includes in particular the work tasks and duties the employee must perform. (Striteska et al., 2016) The job description is the basis for the deduction of job requirements for the employee; it is a specification of the job. (Toth-Tegles et al., 2016)

The most common components of a job description are job identification, job purpose, job responsibilities, responsibilities, work assignments, working conditions, and contacts. The identification of the job, the work code, the date of the work analysis, the name of the analyst, the name of the company, the workplace, the name of the superior, or the classification in the grade are part of the work identification. (Gogolova et al., 2015)

The job specification is created on the basis of the job description data and expresses a summary of the requirements for the employee and a summary of the skills needed to perform the job. (Sirbu & Pinte, 2014) It is a profile of the human characteristics, abilities and skills of a person that suits the job. In addition to identification data that is the same as when describing a place, the specification should include data on the required education, work experience, physical and psychological assumptions, training and completion of further training courses. (Miri et al., 2014; Klosse & Muysken, 2016)

### **2.3 Sources of information and techniques of collection**

The success of the job analysis and the creation and transformation of jobs based on it depend primarily on the quality of job information (Bono & Judge, 2003). This is usually a matter of particular concern. The first problem is the choice of source or sources of job information. (Liang, 2011) The most common sources of job information are: a job-holder, an employee, collaborators and subordinates, the observer of the job holder, job analysis specialists, an independent professional for the job, other experts, in particular technical experts, existing written documents about the job captured in the internal materials of the company, legal norms and regulations. (Van der Sluis & Van Praag, 2008)

In addition to the choice of resources, it is necessary to decide on the appropriate technique for collecting information. There are quite a number of techniques used in job analysis to find and collect job information. (Wright & McMahan, 1992) They are used individually as well as combined. It is precisely a combination of multiple resources and techniques to provide a more accurate job analysis. The methods of collecting job information include: observation, individual interview, group interview, self-assessment, questionnaire, own performance by analysts, check list of tasks, assessment scales, working daybook, written records. (Mateides, 2006; Timmer et al., 2013)

### **2.4 Methods of job analysis**

Workplace information can be analysed by several methods. (Avasilcai & Hutu, 2003) The universal method is a functional analysis that uses standardized descriptions of activities, responsibilities, and job requirements. Functional analysis characterizes individual work processes in a comprehensive way, based on their relationship to information, people and things. (Landis et al., 1998) Based on these, it can be then created an image of work content at work. The Position Analysis Questionnaire (PAQ) is another example of a universal method based on a certain categorization of employee activities. It is based on the fact that each work contains information, mental and physical activities, and relationships with other employees, working environment and other contexts and characteristics. By contrast, an example of a method of analysis appropriate to a particular category of jobs is the Management Position Description Questionnaire (MPDQ) method. This is a structured questionnaire designed specifically for analysing managerial jobs. In addition to these analyses, there are a number of other methods, such as the HAY method, critical case method, and AET. (Mateides, 2006)

## 2.5 Timetable and periodicity of job analysis

Depending on the purpose and utilization of the job information obtained, a timetable for the work analysis process is drawn up in the form of action plans that will contain the individual steps of the analysis, indicating the responsibilities and timing of the implementation. The timetable will also serve as a control tool. (Piccolo & Colquitt, 2006)

Changes in work requirements must also be changed in the case of changing job requirements. (Becker & Gerhart, 1996) Jobs are evolving, changing according to the tasks the company has, depending on the time and the development of new technology, depending on the dynamic characteristics of the work. For this reason, labour analysis is a continuous process of job research. (Lazear, 1995)

An important condition for a successful job analysis is employee participation in its creation. In particular, help with providing information on the work done, willingness to cope with new tasks, attending training, giving up work done so far and accepting compensation. (Liu, 2005) Companies that systematically use job analysis have fewer problems with their employees and achieve higher performance and workplace satisfaction.

## 3. Paper objective and methodology

The target of paper is to analyse current situation of job analysis in Slovak companies and to compare to situation in the past. There were 4 key issues of finding out:

1. an existence of job analysis,
2. carrying out job analysis according to category of employees,
3. an administrator of job analysis,
4. methods used to job analysis.

The information used in the article was gained from the primary and secondary sources:

- a) **primary sources** – survey made by authors. The survey was realized in the year 2016. There were 322 respondents and the aim of survey was to detect the level of job analysis in Slovak companies. The questions had close form.
- b) **secondary sources** – survey made by Kachaňáková, Stachová and Stacho in the years 2010 – 2012. The survey sample of companies was randomly addressed. We only used 3. stage of their survey in year 2012 and there were 340 respondents. The questions had form of an open, close and scale questions. The main objective of annual survey was to detect the way of human resources management in Slovak companies. The next sources were foreign and domestic literature and articles linked to presented issue. The key area of interest was job analysis.

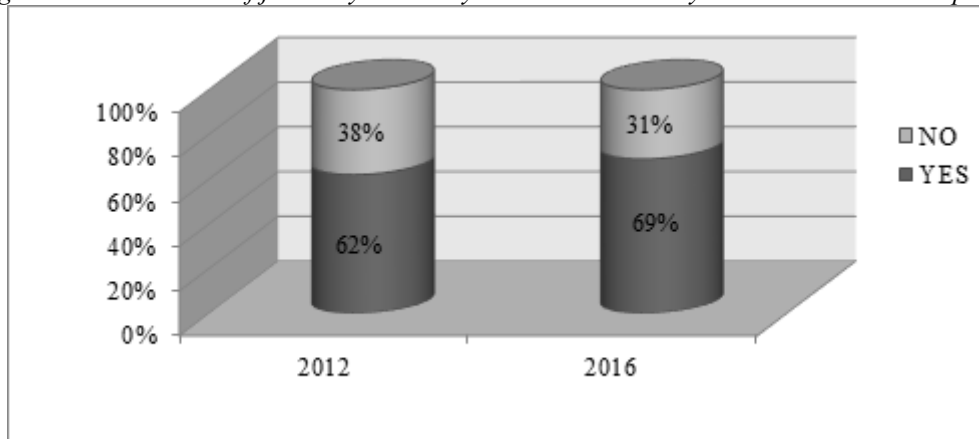
Some else methods that were used too: the **analysis** of results and gained information from primary and secondary sources, **synthesis** and the method of **deduction**, the first as a tool for overall review of level of job analysis in Slovak companies and the second in order to support the conclusions, the method of **induction** when the development of job analysis in Slovak companies were discussed.

## 4. Results and discussion

Firstly, the surveys detected percentage of companies that carry out the job analysis. There can be seen positive rising trend – an increase of 7 % in comparing the year 2016 to the year

2012 and there is a premise of increasing yet. The value got better as a positive reaction to ending of economic crisis, effect of globalized market that enabled the entry of the experienced companies with foreign capital and their methods, as well the use of innovative approach in thinking of companies.

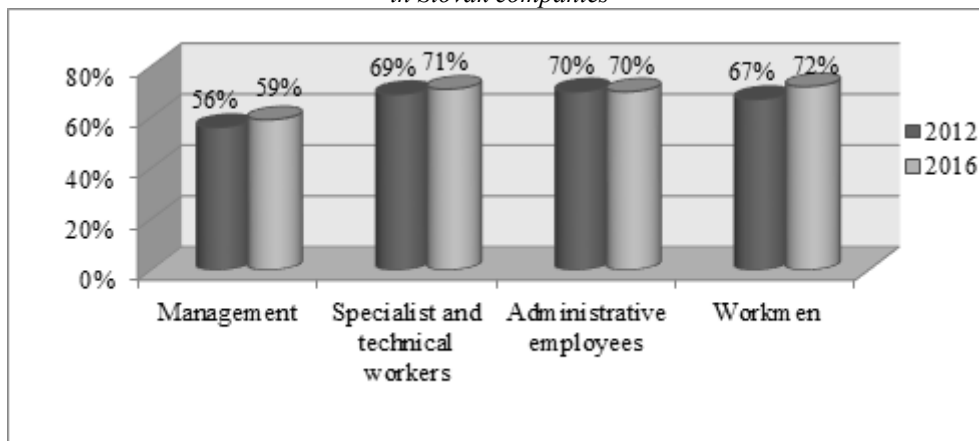
Figure 2: The existence of job analysis in the year 2012 and in the year 2016 in Slovak companies



Source: Authors on the base of own survey and on the base of survey of Kachanakova et al., (2013).

Secondly the survey detected the carrying out of job analysis according to category of employees. In every category of employees has the proportion of carrying out job analysis ascending except for administrative employees, this proportion has not changed. The biggest spread of rise has been noted in category of workmen. In the year 2012 as well in the year 2016 was the least attention paid to job analysis of the management. That is why it is necessary to anticipate rapid growth of use job analysis in this category of employee in the closest years.

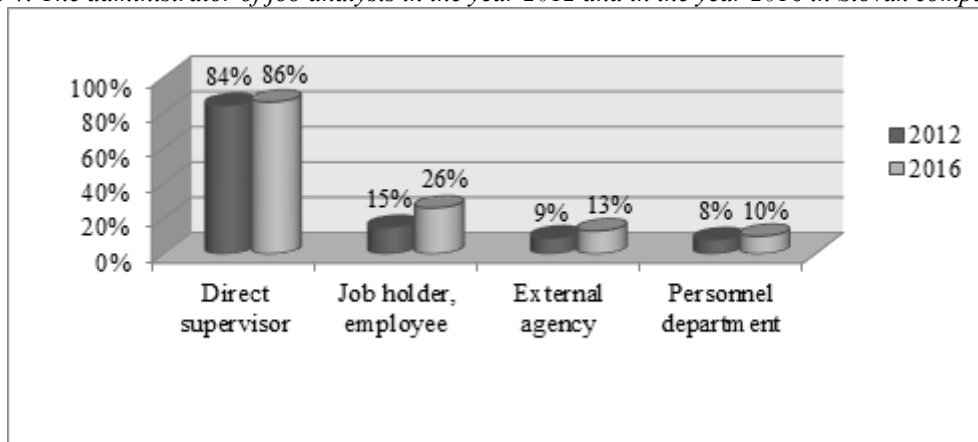
Figure 3: Carrying out of job analysis according to category of employees in the year 2012 and in the year 2016 in Slovak companies



Source: Authors on the base of own survey and on the base of survey of Kachanakova et al., (2013).

Thirdly the surveys looked at the administrator of job analysis in Slovak companies. In both years has been this issue strongly in hands of direct supervisors. The portion every administrator has ascended, the spread was from 2 % to 11 %. Although the most significant rise was by job holder, we still think and we anticipate next growth in this area, because there is still some space for expand and the job holder is the most important person in the process of job analysis and can provide the most relevant information in every point of view of the job.

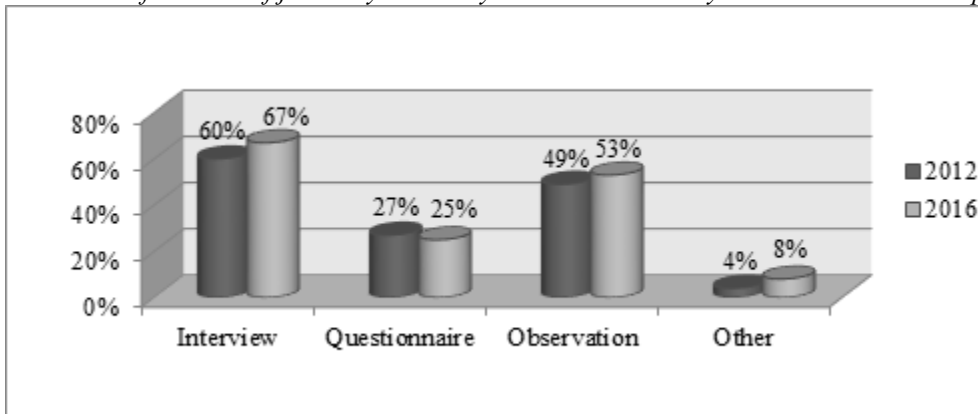
Figure 4: The administrator of job analysis in the year 2012 and in the year 2016 in Slovak companies



Source: Authors on the base of own survey and on the base of survey of Kachanakova et al., (2013).

Finally the surveys examined methods used for job analysis in Slovak companies. The use of every method has been ascending except questionnaire, this proportion has descended by 2 %. The most often used method has been interview and its use still has been rising. In future will happen certain growth in the use of questionnaires as well little growth in the interviews with employees, because there was set up a trend to integrate employees as an inseparable part of job analysis.

Figure 5: The use of methods of job analysis in the year 2012 and in the year 2016 in Slovak companies



Source: Authors on the base of own survey and on the base of survey of Kachanakova et al., (2013).

## 5. Conclusion

Job analysis in general is a systematic process of collecting and evaluating data on the nature of individual work activities. The aim of the job analysis is to obtain information about the tasks, methods, duties, rights and links to other horizontal and diagonal connected jobs within the organizational structure and also to obtain information about the need and the level of physical and mental dispositions of the employee who will perform the job. Thereafter, the information obtained should be evaluated in the light of current business needs and strategies, and in the light of current technologies that can make it easier for employees to reduce their time consuming. The information obtained should be summarized in the form of a job description and specification of the requirements for the employee and ensure implementation.

The situation in job analysis in Slovak companies in year 2016 has got better than in year 2012. Slovak companies pay bigger attention to analyse the job. It is very big assumption, that



Slovak companies select the right employee to the right job, because after right and regularly made job analysis company will know the specification and description of the job and on the other hand the employees will know the anticipate requirements from them and it will be win-win situation. But there are still some gaps, so systems of job analysis stay in front of way of development and improvement, especially in the areas of carrying out job of job analysis for management, bigger connecting of employees within and more often use of the opportunity of sharing ideas from other local or foreign companies thanks globalization.

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# THE POTENTIAL OF USING GLOBALLY USED LOGIT BANKRUPTCY MODELS IN SLOVAKIA

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**Abstract.** The problematics of the bankruptcy models is a relatively frequent topic of economists all over the world, especially in recent decades. The models created in the second half of the last century are still in use today, especially the Altman model created using the Multidimensional Discrimination Analysis method as well as the Ohlson logit model. Generally, new models adapted to the conditions of same country and the global economic situation are being created and used. One of the most widely used methods for creating bankruptcy models is the logistic regression model. One of the first logit models was the already mentioned Ohlson logit model, created in 1980 under the conditions of the US economy. Since then, many logit bankruptcy models have emerged in many countries around the world, including the Slovak Republic. In this paper we analyze the potential of using both foreign and Slovak logit models to predict the financial health of companies operating in the current conditions of the Slovak economy, which are largely influenced by globalization. In the analysis, we use real data from the financial statements from recent years. We focus on the ability to predict the financial distress of Slovak companies in a timely manner.

**Keywords:** Bankruptcy models, Logit model, Financial ratios, Financial distress.

**JEL Classification:** C38, C53, G33

## 1. Introduction

A common part of the market economy is failure of the company. This failure has a negative impact on everyone entering a business relationship with a company. One of the biggest business risks is credit risk and the associated inability of secondary insolvency. Therefore, it is necessary to assess the credit risk and to predict the future financial situation of the company. Based on the credit risk assessment and the financial health prediction, companies and their management can take the necessary remedial action.

Assessing credit risk or predicting corporate financial health is the primary objective of ex-ante financial analysis, especially bankruptcy models. Bankruptcy models can predict a possible business failure. The problem that needs to be solved when applying bankruptcy models is the choice of those bankruptcy models that would best assess the potential failure of analyzed company.

The main goal of bankruptcy models is to express the financial situation of the company using a single number. They are based on the construction of classification models using historical data. They assume that the past values of selected financial ratios can indicate the future financial health of the analyzed company. The company is then classified on the basis of several indicators as being prosperous or non-prosperous. Thus, bankruptcy models warn against possible default of the company. (Siekelova et al., 2017; Swinkels & Xu, 2017)

The first commonly used bankruptcy model has been the Altman Z-score model. This was the first bankruptcy model in which the Multidimensional Discrimination Analysis (MDA) method was used. The essence of this method is to find a linear combination of financial ratios from past years that best distinguishes companies to prosperous and non-prosperous ones. Over the next decades, Altman has created several bankruptcy models for specific types of companies or different economic conditions. (Kliestik et al., 2017) In 2016, a study was published in which the authors analyzed the classification ability of the Altman Z-score on a sample of 31 European and 3 non-European companies. The authors state that this is the first study to provide such a comprehensive international analysis. (Altman et al., 2016) Of course, the MDA method has been used by other authors in various countries to construct bankruptcy models. (Adamko & Svabova, 2016; Boda & Uradnicek, 2016)

Another very useful method for creating bankruptcy models is logistic regression (so-called logit models). The purpose of the logit model is to determine the probability that company belongs to a group of non-prosperous companies (if this probability is greater than 0.5). Ohlson O-score model is the first published bankruptcy logit model. This model was published in 1980 and reached a very high prediction ability of up to 96%. Another logit bankruptcy models have been created around the world, but especially in the US. For example, in 2007, a logit model was developed to predict the financial health of small and medium-sized enterprises in the US. (Altman & Sabato, 2007) The logit model was created for companies in Taiwan. (Lieu et al., 2008) Lin & Piesse (2004) created a logit model for the UK industrial sector. In 2000, the logit model for companies in South Korea was published. (Nam & Jinn, 2000) Jovanovic et al. (2017) published bankruptcy model for large companies in Serbia. Bankruptcy model was developed also for Romanian companies. (Achim et al., 2016) Logistic regression method was used to creation of bankruptcy model for Belgian SMEs. (Cultrera & Brédart, 2016) Financial distress prediction model for French SMEs was constructed using logistic regression model and also other techniques. (Mselmi et al., 2017; Branson et al., 2017)

Several logit bankruptcy models have also been created in Central Europe. In 1984 Zmijewski published a model that is still used today. (Zmijewski, 1984) The accuracy of original version of this model was 98.2%, which is a very high number. However, when using other company samples from different time periods, the model's ability varies between 58.7% and 86.1%. Authors Jakubík & Teplý (2008) constructed a logit model in the conditions of the Czech Republic. In Hungary, the bankruptcy model Virág-Hajdu was created by MDA and logit. (Virág & Hajdu, 1996) Under the conditions of the Slovak economy, several logit models were created. This is particularly the Hurtošová model from 2009 and the Gulka model from 2016. (Vlkolinský, 2013; Gulka, 2016)

## 2. Methodology

In Slovakia, as well as in other countries, prediction models created in other economic conditions are commonly used. But much more effective is using of local models reflecting local economic conditions. We have focused on the analysis of the prediction ability of some

commonly used logit type bankruptcy models from Slovakia and from the countries near Slovakia. We have chosen these models: Virág-Hajdu, Jakubík-Teplý, Hurtošová and Gulka model. For completeness, we included in the analysis still commonly used Ohlson O-score model developed in terms of the US economy several decades ago.

From 1970 to 1976, Ohlson analyzed 105 non-prosperous and 2058 prosperous US industrial companies. In 1980 he published the so-called O-Score model, which works with 9 financial ratios. This model had a prediction ability of 96%. (Kliestikova et al., 2017)

The first Hungarian bankruptcy model was constructed by Virág and Hajdu in 1996, based on the company database of the Hungarian Ministry of Finance. The database contained data from 1990 to 1991 about 154 companies (77 prosperous and 77 non-prosperous). The authors examined the original 17 financial ratios and created a model using MDA as well as logistic regression. Final logit model works with 5 ratios. (Virág & Kristóf, 2005)

From 1993 to 2004, Petr Jakubík and Petr Teplý analyzed a sample of 757 Czech companies (606 prosperous and 151 non-prosperous). They created a bankruptcy model, so-called JT index, using logit analysis. The model works with 7 ratios. The authors report the prediction accuracy of the JT index of 80.41%. In 2006, the model was included in the Czech National Bank's quantitative apparatus for evaluating the financial stability of non-financial sectors. (Jakubík & Teplý, 2011)

Based on the real data from an unidentified Slovak commercial bank, Jana Hurtošová developed her model in 2009. The analyzed sample consists of 427 companies (94 non-prosperous and 333 prosperous). Applying the model of logistic regression, she designed a model with 4 indicators predicting the failure of a company a year ahead. (Vlkolinský, 2013)

In 2016, Martin Gulka developed a Slovak bankruptcy model using logistic regression. Gulka analyzed a sample of 120 854 business companies operating in the Slovak Republic (120 252 prosperous and 602 non-prosperous). The model contains 7 indicators, out of the original 25, and is able to predict the default one year ahead. The classification ability of the model is approximately 75% to 80%. (Gulka, 2016)

Our research is focused on verification of the prediction ability of selected logit models in SR conditions. Our initial database contains real data from the financial statements of 64 341 companies accounting in the tax system of the Slovak Republic. However, for many companies, it was not possible to calculate the value of some of the bankruptcy models due to zero division, and so on. Finally, database contains of 23 087 companies, 3 430 are non-prosperous companies and the remaining 19 657 are prosperous ones. We identify the company as non-prosperous on the basis of currently valid legislation.

We used real data from the financial statements, balance sheets and profit and loss accounts from the year 2015 obtained from the Register of Financial Statements of the Ministry of Finance of the Slovak Republic. Then we calculated the values of all financial ratios for each company that is required for analyzed models prediction. For each company probabilities of non-prosperity are compared with the boundary value 0.5 and then the decision is made whether the given model considers the company to be non-prosperous (probability of non-prosperity is greater the 0.5) or not. The quality of the models is calculated as the percentage of well-identified non-prosperous companies and prosperous ones, too. We also compare the Type I errors and Type II errors of the analyzed models. The Type I error is the case when the bankruptcy model incorrectly identified the non-prosperous company as prosperous. Similarly, Type II error occurs if a prosperous company has been identified by a model as non-prosperous.

### 3. Results and discussion

The following Table illustrates classification ability of analyzed models. In this table, for variable prosperity symbol 0 denotes prosperous company and symbol 1 non-prosperous one. The same meaning is given by these symbols for each model. In this case, the symbol 0 means that the model has identified the companies as being prosperous, and symbol 1 indicates those companies that have been identified as non-prosperous by the model.

Table 1: Classification tables of analyzed models and their prediction ability

Model			Prosperity		Total	Prediction ability
			0	1		
Ohlson model	0	Count	16395	587	16982	83.33%
		% within prosperity	83.41%	17.11%	73.56%	
	1	Count	3262	2843	6105	
		% within prosperity	16.59%	82.89%	26.44%	
Virág-Hajdu model	0	Count	14685	850	15535	74.78%
		% within prosperity	74.71%	24.78%	67.29%	
	1	Count	4972	2580	7552	
		% within prosperity	25.29%	75.22%	32.71%	
Jakubík-Teplý model	0	Count	17511	437	17948	88.81%
		% within prosperity	89.08%	12.74%	77.74%	
	1	Count	2146	2993	5139	
		% within prosperity	10.92%	87.26%	22.26%	
Hurtošová model	0	Count	13978	1328	15306	69.65%
		% within prosperity	71.11%	38.72%	66.30%	
	1	Count	5679	2102	7781	
		% within prosperity	28.89%	61.28%	33.70%	
Gulka model	0	Count	16167	625	16792	82.18%
		% within prosperity	82.25%	18.22%	72.73%	
	1	Count	3490	2805	6295	
		% within prosperity	17.75%	81.78%	27.27%	
Total	Count		19657	3430	23087	
	% within prosperity		100.00%	100.00%	100.00%	

Source: Authors processing based on IBM SPSS STATISTICS outputs.

As can be seen in the Table 1, the Ohlson, Virág-Hajdu, Jakubík-Teplý and Gulka model have reached a quite good predictive ability. The Hurtošová model correctly classifies only 71% of prosperous companies and 61% of non-prosperous companies.

Jakubík-Teplý model from the Czech Republic have reached the highest predictive ability. Up to 89% of prosperous companies and up to 87% of non-prosperous companies have been correctly identified by this model. The Type I error of this model is 12.74%, so that 12.74% of the non-prosperous companies have been wrongly identified as prosperous.

The Ohlson model and the Gulka model correctly classified more than 80% of companies and reached Type I error of about 17% or 18% respectively. The Hungarian Virág-Hajdu model correctly classified about three quarters of all companies.

### 4. Conclusion

Early detection of threatened bankruptcy and its possible averting is one of the main tasks of the management of every company. For this purpose, bankruptcy models have been constructed all over the world. We have focused on the analysis of the prediction ability of the

logit bankruptcy models used under the conditions of the current post-crisis economic situation in Slovak Republic. We have analyzed the financial situation of 3 430 non-prosperous companies and 19 657 prosperous companies using five selected logit models. For the analysis we have used 2 Slovak models and 3 foreign models.

Based on our results, we can conclude that the most suitable model for predicting the financial distress of Slovak companies is the Czech Jakubík-Teplý model. This model correctly identified nearly 89% of all companies and Type I error of this model is only 12.74%. The Ohlson model created under the US economy conditions in 1980 and the Slovak Gulka model developed in 2016 have achieved prediction ability more than 80%. Three quarters of all companies have been well-identified by the Hungarian Virág-Hajdu model. The lowest classification ability (less than 70%) has been achieved by the Slovak Hurtošová model. Also, this model has the biggest Type I error nearly 39%.

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## GLOBALIZATION AND SOCIO-ECONOMIC CONDITIONS OF EMPLOYMENT OF WOMEN IN THE VISEGRAD GROUP COUNTRIES

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**Abstract.** Globalization has been associated with profound changes in the labor market such as changes in the level and structure of labor demand, in skill shortages and relative wages, and in employment elasticities, among others. All of these have far reaching implications on worker's welfare and therefore on the success of the process of adjustment to globalization itself. This paper presents the evaluation of the current position of women and socio-economic conditions on the labour market within the Visegrad Group. The first part is devoted to the characteristics of documents dealing with the employment policy of women and it also analyses conditions and position of women in selected countries. The second part contains analysis and comparison of level of family policies in selected countries with the EU and the assessment of financial support of women during their maternity leave. This part is complemented with the sociological survey focused on "the position of women on labour market in Visegrad group. The Visegrad group countries have all experienced a transition to a market economy in the last two decades, but their family policies are by no means uniform. In the early years of this transition, the main guideline for organizing family allowances was the principle of universality, with the aim of compensating for the loss of job security and wage subsidies that characterized the former system. However, many of these countries have since moved toward means-tested support, while less emphasis has been placed on policies enabling women to combine motherhood with paid work.

**Keywords:** globalization, employment of women, visegrad group countries

**JEL Classification:** J64, P21, R11

### 1. Introduction

Sociálno-ekonomické podmienky žien patria v súčasnosti vo väčšine európskych štátov k jednému z najsledovanejších ekonomických ukazovateľov. Konkrétne zníženie miery nezamestnanosti žien a problémy súvisiace s nimi patrí k hlavným prioritám národných vlád členských štátov Európskej únie. Súčasná situácia a neustále prehlubujúce problémy pracovných trhov si vyžadujú časté zmeny prístupu k ich riešeniu. Riešenie problémov zamestnanosti žien v jednotlivých krajinách sa líši, môžeme sledovať rozdiely v ekonomickej vyspelosti, odlišné rysy a kultúry jednotlivých krajín. (Nelson, 2008) Nájdeť ale aj spoločné

črty, napr. nezamestnanosť vyšších vekových kategórií, mládeže a absolventov, najmä nezamestnanosť na základe pohlavia a dlhodobej nezamestnanosti. (Anderson, 2016) Pracovné trhy majú problém so zamestnanosťou podľa pohlavia, ktorá je v určitej miere veľmi rozšírená a nie je vždy jednoduché nájsť vhodné opatrenia na jej riešenie. (Matysiak, 2014)

Všetky krajiny Visegrádskej skupiny usilovali o členstvo v Európskej únii. Svojou integráciou do Európskej únie považovali za ďalší bod v procese prekonávania umelých rozdielných čiar v Európe za pomoci podpory. Tohto cieľa dosiahli 1. mája 2004, keď sa všetky stali členskými krajinami Európskej únie. Skupina V4 nevznikla ako alternatíva k úsiliu o celoevropskú integráciu ani sa nepokúsila konkurovať funkčným stredoeurópskym štruktúram. Jej činnosť nesmie v žiadnom prípade spočívať v izolácii alebo oslabení vzťahov k iným krajinám. Hlavnými cieľmi skupín sú najmä podpora optimálnej spolupráce so všetkými krajinami, najmä s krajinami susediacimi s krajinami, a zaujíma sa o demokratický rozvoj všetkých častí Európy. (Malikova et al., 2015) Višeegrádska spolupráca sa stala znakom stability v strednej Európe. Spolupráca V4 je na medzinárodnej scéne uznávaná a začína byť záujem z rôznych smerov, na ktoré V4 reaguje ponukou spolupráce na určitých projektoch vo formáte nazvanom "V4 +". Pre Českú republiku je hlavným cieľom tejto iniciatívy rozvíjanie konkrétnych projektov, napr. medziresortní spolupráce, zavádzaní schengenských noriem alebo posilňovanie vzťahov medzi jednotlivými občanmi Visegrádskej skupiny. (Tvrdon, 2016)

## 2. Strategické dokumenty zamestnanosti žien v Európskej únii

Rovnosť žien a mužov je jedným z hlavných cieľov Európskej únie. Táto zásada a jej uplatňovanie v rámci EÚ postupne pomohli posilniť právne predpisy, judikatúru a zmeny jednotlivých zmlúv. (Scott et al., 2008) Európsky parlament bol vždy rozhodným zástancom zásady rovnosti žien a mužov. Zásada, že muži a ženy by mali dostávať rovnakú odmenu za rovnakú prácu, je zakotvená v Rímskej zmluve z roku 1957, ktorá zahŕňa záväzok postupne znižovať rozdiely vo vývoji medzi regiónmi a podporovať zlepšovanie životných a pracovných podmienok a zamestnávanie pracovníkov s cieľom postupnej harmonizácie a vzájomného zlepšovania. (Gordon & Clark, 1984) Vytvoril sa Európsky sociálny fond ako kľúčový nástroj na realizáciu európskej politiky zamestnanosti, ktorej hlavným cieľom je finančná podpora rozvoja zamestnanosti, zníženie nezamestnanosti, sociálnej inklúzie a rovnakých príležitostí so zameraním na rozvoj trhu práce a ľudských zdrojov. (Jasova et al., 2016)

Európsky hospodársky a sociálny výbor bol zvolený za poradný orgán s jasným cieľom poskytnúť odborné poradenstvo hlavným inštitúciám Európskeho spoločenstva, ktoré majú stanoviská k návrhom právnych predpisov alebo stanoviskám z vlastnej iniciatívy o hlavných otázkach, ako sú zamestnanosť, sociálne záležitosti, verejné zdravie alebo rovnaké príležitosti. (Bruns, 2017) Hlavná zodpovednosť za sociálnu politiku spočíva najmä v členských štátoch, ktorých vnútroštátne politiky sú koordinované prostredníctvom Rady pre zamestnanosť, sociálnu politiku, zdravie a ochranu spotrebiteľa (EPSCO) na podporu sociálneho blahobytu najmä podporou vysokokvalitných pracovných miest sociálnej ochrany, zdravia a záujmov spotrebiteľov a zabezpečiť rovnaké príležitosti pre všetkých občanov Európskej únie. (Goldin & Mitchell, 2017) Rada je zložená z ministrov zodpovedných za zamestnanosť, sociálnu politiku, ochranu spotrebiteľa, zdravie a rovnosť príležitostí. Stanovuje spoločné ciele a priority, analyzuje opatrenia prijaté na vnútroštátnej úrovni a vydáva odporúčania členským štátom. Hlavným aspektom je výmena informácií, skúseností a príkladov osvedčených postupov. Výbor pre zamestnanosť (EMCO) a Výbor pre sociálnu ochranu (SPC) pracujú na diskusii o týchto otázkach medzi členskými štátmi. (Galgoczi, 2009)

V roku 2006 bol na Európskej úrovni vytvorený Európsky inštitút pre rodovú rovnosť (EIGE) Európskym parlamentom a Radou pre rodovú rovnosť so sídlom v litovskom Vilniuse. (Necadova & Soukup, 2013) Jeho celkovým cieľom je prispievať k podpore a posilňovaniu rovnosti medzi ženami a mužmi vrátane uplatňovania rodového hľadiska vo všetkých politikách EÚ a členských štátov. V decembri 2015 Komisia vydala strategický záväzok v oblasti rodovej rovnosti na obdobie rokov 2016-2019 ako pokračovanie a rozšírenie stratégie rodovej rovnosti na roky 2010 - 2015. Strategický záväzok sa zameriava na nasledujúcich päť prioritných oblastí podľa Európskeho inštitútu pre rodovú rovnosť. (Zielinski, 2015)

- Zvyšovanie účasti žien na trhu práce a rovnaká ekonomická nezávislosť
- Zníženie mzdových rozdielov a rozdielov v úrovni dôchodkov pre ženy a mužov, a tým boj
- proti chudobe žien
- Podpora vyváženého zastúpenia žien a mužov vo vedúcich pozíciách
- Boj proti rodovému násiliu a ochrane a podpore obetí
- Presadzovanie rodovej rovnosti a práv žien na celom svete

Ďalším hlavným dokumentom je Akčný plán pre rodovú rovnosť 2016-2020. Dňa 26. októbra 2015 Rada prijala akčný plán pre rodovú rovnosť 2016-2020 na základe spoločného vnútorného pracovného dokumentu Komisie a Európskej služby pre vonkajšiu činnosť s názvom Rovnosť žien a mužov a posilnenie postavenia žien: transformácia života žien a dievčat prostredníctvom vonkajších vzťahov EÚ v rokoch 2016-2020. (Janku & Kucerova, 2014) Nový Akčný plán pre rodovú rovnosť zdôrazňuje potrebu dosiahnuť plné a rovnaké využívanie všetkých ľudských práv a základných slobôd ženami a dievčatami, ako aj dosiahnutie rovnosti medzi ženami a mužmi a posilnenie postavenia žien".

### 3. Metodológia

Na základe štúdií a analýz súčasných dokumentov rodinných politík v jednotlivých krajinách bola prevedená komparácia dokumentov krajín V4 podľa vybraných ukazovateľov (rodinné prídavky, daňová politika, bytová politika). Rodinné politiky boli hodnotené podľa vytvorenej evaulačnej stupnice o bodovom rozpätí 1-3 body. Tri body boli udelené v prípade vyhovujúceho (zohľadňujúceho sociálne podmienky matiek) existujúceho systému a možných ďalších vypracovaných návrhov a opatrení pre jednotlivé krajiny. Dva body boli pridelené v prípade vyhovujúceho existujúceho systému bez ďalších návrhov a opatrení. Jeden bod bol pridelený v prípade, že rodinná politika prináša iba všeobecnú charakteristiku daného problému bez následných návrhov a opatrení. Na záver boli jednotlivé rodinné politiky hodnotené a porovnané. Finančné ohodnotenie žien sa uskutočňuje na základe štatistických údajov získaných v jednotlivých krajinách a následne bolo prevedené ich porovnanie.

Doplňujúcou časťou bolo sociologické šetrenie realizované v krajinách Višegradskej skupiny. Bola zvolená dotazníková metóda s uzavretými otázkami. Šetrenie bolo realizované elektronicky a osobne, z každej krajiny 80 respondentiek. Výskumná vzorka bola vopred špecifikovaná, tak aby bola možnosť porovnania (veková štruktúra, vzdelanostná štruktúra a pracovná pozícia). Výsledky boli vyhodnotené analýzou prvého a druhého stupňa.

## 4. Výsledky

### 4.1 Evaluácia národných rodinných politík Višeградской skupiny

Rodinné politiky boli evaluované podľa stupnice 1-3 bodov. Bola realizovaná ich celková analýza, ich systematickosť a uplatniteľnosť v praxi. Pri porovnávaní rodinných politík v jednotlivých dokumentoch boli vybrané a dostupné vo všetkých sledovaných krajinách tri rodinné politiky. Ide o rodinné prídavky, daňovú politiku a politiku bývania. Tri body boli pridelené v prípade uspokojivého systému a možného ďalšieho navrhovania a opatrení špecifických pre jednotlivé krajiny. Dva body boli pridelené v prípade uspokojivého existujúceho systému bez ďalšieho návrhu a činnosti. Jeden bod bol pridelený, ak rodinná politika vytvára len všeobecnú charakteristiku problému bez následných návrhov a opatrení (Tab. 1).

Table 1: Hodnotenie dokumentov národných politík krajín Višeградской skupiny)

Krajina	Hodnotené Rodinné politiky			Výsledky
	Rodinné prídavky	Daňová politika	Bytová politika	
Česká republika	2	3	2	<b>7</b>
Maďarsko	1	2	3	<b>6</b>
Slovenská republika	2	2	1	<b>5</b>
Poľsko	2	1	2	<b>5</b>

Source: Vlastné spracovanie

Z hľadiska rodinných prídavkov boli Českej republike a Slovensku pridelené dva body. V Českej republike sa príspevok na dieťa vypláca v závislosti od veku dieťaťa v rozmedzí od 0 do 6 rokov a od výšky rodinných príjmov, na Slovensku je príspevok na dieťa nezávislý od výšky rodinných príjmov. Táto analýza ukazuje, že Česká republika a Slovensko majú odlišný postoj v podpore rodiny s malými deťmi a rodinami celkovo. Slovensko poskytuje rodinné prídavky a podpora dieťaťa tým, že nediskriminuje rodiny, nezohľadňuje úroveň rodinných príjmov. V Poľsku je situácia založená na počte detí v rodine, kde sa výška príspevku určuje individuálne. V Maďarsku závisí od počtu detí v rodine a od úplnosti rodiny.

Posúdenie krajiny z hľadiska daňovej politiky ukazuje, že Česká republika spolu s Maďarskom a Slovenskom má vo všeobecnosti veľmi podobné podmienky vo forme možnosti odpočítať dieťa. Česká republika poskytuje daňové odpočty v poradí narodenia dieťaťa. Slovensko poskytuje jediný daňový úver pre každé dieťa. Maďarsko je založené na počte detí v rodine. Výnimkou je len Poľsko, kde existuje jediná odpočítateľná položka z hľadiska rodinnej a daňovej politiky, ktorá predstavuje náklady na cestu do školy mimo miesta trvalého pobytu.

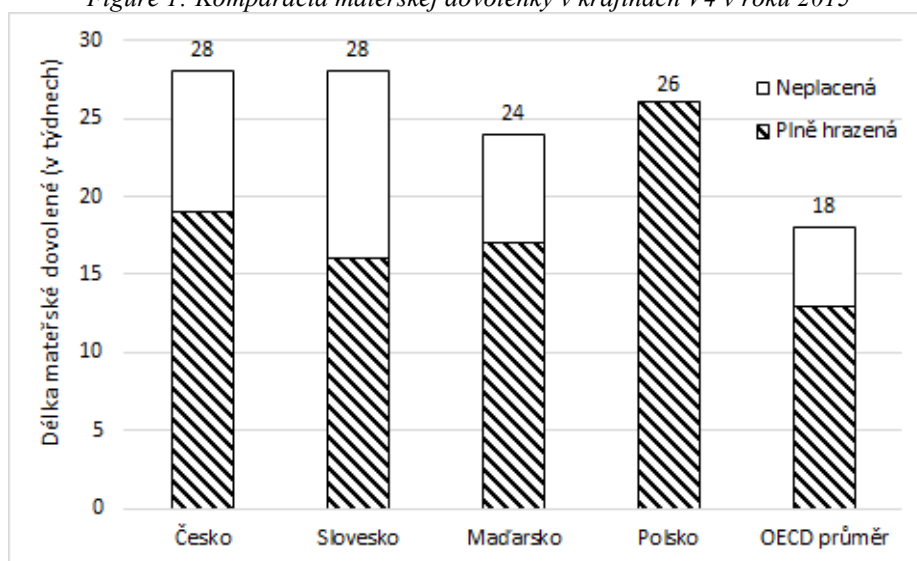
Z pohľadu politiky bývania v krajinách Vyšeградской skupiny existujú určité rozdiely v jednotlivých krajinách pri posudzovaní jednotlivých rodín (Redmond et al., 2017). Najlepšie je Maďarsko, kde sa vláda snaží podporovať najmä bývanie rodín s deťmi. Štát poskytuje pôžičky rodinám a ich výška závisí od počtu detí v rodinách. Úvery sa poskytujú aj vopred, čo znamená, že pôžičku poskytuje aj rodinám bez dieťaťa. Poľsko ponúka aj možnosť pôžičiek pre rodiny, ale podmienky na ich získanie sú komplikovanejšie. Slovenská republika poskytuje rodinám s deťmi finančnú dávku vo forme príspevku na bývanie, doplatok na bývanie, mimoriadna okamžitá pomoc, príspevok na úpravu bytu a mesačný príspevok na bývanie. Slovensko zaostáva v politike bývania, ale poskytuje výhody napríklad vo forme preferenčných nájomných zmlúv. Výsledky národných politík na vybraných ukazovateľoch (rodinné prídavky, daňová politika, bytová politika) krajín vyšeградской skupiny vykazujú podobné výsledky. Česká republika bola najlepšia. Maďarsko je na druhom mieste. Naopak Slovensko

a Poľsko skončili rovnakým počtom piatich bodov. Rodinná politika v krajine je jednou z hlavných priorít podpory rodiny, celkovo pre ženy a veľmi úzko súvisiace so sociálno-ekonomickými podmienkami zamestnania žien. (Kuchař, 2007)

#### 4.2 Porovnanie finančných podmienok počas materskej a rodičovskej dovolenky v krajinách V4

Pri porovnávaní veľkorysosti materskej dovolenky možno považovať za najštedrejší systém považovať systém poľský a český viz. Figure 1. Jedine v Poľsku je plná materská dovolenka vo výške predchádzajúcej mzdy. Nepojistené ženy majú v Poľsku nárok iba na 20 týždňov hradenej materského dovolenky. Najnižšie príspevky v materstve čerpajú ženy na Slovensku, ktoré sa týkajú 65% z vymeriavacieho základu.

Figure 1: Komparácia materskej dovolenky v krajinách V4 v roku 2015



Source: OECD Family Database, (2015) - vlastné spracovanie

Otcovská dovolenka existuje iba v Maďarsku od roku 2002 (5 dní) a Poľsku od roku 2010 (14 dní). V Českej republike sa v roku 2016 rokovalo o návrhu na zavedenie 7 dní pôrodnej dovolenky v prvých 6 týždňoch po porodu. Príspevok pri jeho čerpaní činí 70% vymeriavacieho základu. V Českej republike teda budú ľudia dostávať novú možnosť, ako pomôcť matke svojho dieťaťa počas prvých 6 týždňov. Vláda teraz schválila návrh ministra práce a sociálnych vecí Michaely Marksovej na zavedenie novej dávky zo systému nemocenského poistenia, materskej poporodnej starostlivosti. Ak ju podporí aj Parlament, mohol by táto novinka vstúpiť do platnosti už v priebehu roku 2017.

Porovnanie rodičovskej dovolenky je trochu zložitejšie. V Česku si môžu rodičia zvoliť 2, 3 alebo 4 roky dlhú rodičovskú dovolenku, ktorých príspevok podľa varianty je v priemere max. 45% priemernej národnej mzdy (2 roky), max. 30% priemernej národnej mzdy (3letá) alebo 30% priemernej mzdy v prvých 9 mesiacoch veku detí a potom 15% do veku 4 let detí (4letá). (Maximálne 28% priemernej národnej mzdy), alebo príspevok na starostlivosť o dieťa, ak dieťa navštevuje jasle alebo iné podobné zariadenia (max. 28% priemernej národnej mzdy). V Maďarsku sú dva rôzne príspevky na starostlivosť o dieťa, prvé je pre sociálne poistených (70% z vlastného priemerného mzdy z predchádzajúceho roka) a druhé je pre nepoistených rodičov (cca 13% priemernej národnej mzdy). V Poľsku existuje rodičovský príspevok od roku 2011 a je univerzálny (platí pre deti narodené od 31. 12. 2012), jeho výška činí 60% z mzdy matky za obdobie 26 týždňov. (Eige, 2017)

Využívanie otcovskej rodičovskej dovolenky je veľmi neobvyklé vo všetkých porovnávaných krajinách, predovšetkým je podmienené ekonomickou výhodou existujúcich systémov vybraných krajín. Za iné podstatné dôvody možno považovať zainteresované stereotypy vo vnímaní materstva, ale aj postoje zamestnávateľov a ekonomické faktory, ako sú obvykle vyššie platy mužov ako žien. Najnižšie využitie rodičovskej dovolenky je pre otcov na Slovensku (menej ako 1%), ďalej v Česku a Poľsku (pod 2%). V Maďarsku sa podiel otcov na rodičovskej dovolenke pohybuje okolo 3%. Príčinou tohto mierne vyššieho zastúpenia otcov v starostlivosti o deti môže byť ako jedna z možných príčin a to výpočet príspevku z vlastnej mzdy, na rozdiel od príspevkov v ostatných troch krajinách.

## 5. Conclusion

Špecifický model zamestnanosti žien, ktorý sa vyznačuje dlhým obdobím ekonomickej neaktivity matiek a ne-návratom sa do zamestnania medzi porodením jednotlivých detí, pravdepodobne prispieva k vysokému počtu hodín v zamestnaní a časovému rozvrhu práce, ktoré zamestnanec nemá možnosť ovplyvniť.

Výskum národných politík podľa vybraných ukazovateľov (rodinné prídavky, daňová politika, bytová politika) krajín Visegradských skupín odhaluje podobné výsledky, čo môže súvisieť s ich geografickou blízkosťou, spoločnou históriou a podobných postavením v evrópskych štruktúrach. V krajinách Visegradskej skupiny je typická vyššia miera zamestnanosti žien, ktoré však v porovnaní so stratégiou kombinácie pracovného a súkromného života v priebehu životného cyklu v súčasných podmienkach svojej životnej dráhy skôr etapizujú a oddeľujú od seba. Obdobie vysokého počtu hodín starostlivosti o deti sa mení na obdobie s vysokým počtom hodín stravených v práci.

Dlhé prerušenie pracovnej dráhy môže mať dlhodobé následky na ďalší vývoj pracovných dráh žien a jej príjmy. Všetky tieto dôsledky možno považovať za hlavné príčiny problémov, ktoré sa vyskytujú v vybraných krajinách.

Z hľadiska istoty žien na trhu práce znamenajú také znaky podradných pracovných podmienok, ktoré oslabujú negociačnú pozíciu, postavenie a možnosti rozhodovania nielen na trhu práce.

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## THE USE OF SUGGESTION SYSTEM FOR QUALITY IMPROVEMENT IN PRODUCTION ENTERPRISES IN DIFFERENT COUNTRIES

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**Abstract.** In the era of globalization, economic organizations operate in variable economic realities, where markets for goods and services are very complex. In these circumstances enterprises try to gain competitive advantage, for example by use of so-called contemporary concepts and management tools. These researches should include in particular solutions based on, for example, Kaizen philosophy. Typical tool of the Kaizen philosophy is, in relation to the ideas reported by employees, the Suggestion System. In this context, it should be interesting to look at the premises and ways in which different enterprises use the Suggestion System in terms of a tool that can improve the production quality. In every enterprise employees structure is diverse and the interest of individual groups in the Suggestion System can be different. It seems that especially the age of employees can cause such difference. It can be speculated that people below 40 years old employees will be more engaged in the activities connected to the Suggestion System than their older counterparts. The purpose of the paper was to examine the Suggestion System which was used for the quality improvement in chosen production enterprises in three European countries: Poland, Slovakia and Czech Republic, the results of these studies were compared with each other. Particular attention has been paid to the use of this tool by different age groups of employees. Due to the qualitative nature of the research problem, a case study based method has been used. In the empirical studies, voluntary interviews with management and staff were used.

**Keywords:** Suggestion System, Kaizen, quality improvement

**JEL Classification:** D20, L15, L80, M11

### 1. Introduction

The dynamic changes in the contemporary world affect the way the enterprises operate, with their goal being not only to survive but also to develop. On the one hand, this is related with searching for the solutions which have a positive effect on the improved performance and innovatively reorganize their operations. On the other hand, the phenomenon of growing competitiveness is fundamental to adaptive activities of the organization, whereas the effectiveness of these activities depends on their quality and dynamics. (Dulska et al., 2017) Expansiveness and flexibility are among the features that are critical to contemporary business whereas the focus of the business activities is on customers and their satisfaction. Any methods or new solutions implemented in enterprises are aimed at increasing customer satisfaction and, consequently, improving product quality. Therefore, the enterprises need a system that affects



production quality and, at reasonable costs, improves employee effectiveness. (Zhuravskaya et al., 2016; Brozova et al., 2013)

A number of concepts and methods oriented at the improvement of processes in enterprises attempt to meet these requirements. One of them is KAIZEN philosophy, which, through theoretical assumptions and the origins of the name itself, is connected with the concept of continual improvement of the management process and production. Continual improvement of current processes should be characterized by elimination of those which do not add value. (Łangowska, 2014) Etymology of the name, which represents the combination of two words "kai" (change) and "zen" (good, towards the better), highlights the aspect of incessant movement towards improving all the activities. This assumption stems from Japanese management philosophy and was implemented and popularized by Toyota factories. (Małkus & Sołtysik, 2013; Roche et al., 2015)

Kaizen philosophy is inherent in the processes of quality and product improvement in enterprises, whereas the achievement of the set goals depends on implementation of specific systems. These include: Just In Time (JIT) manufacturing system, Kanban, Total Productive Maintenance (TPM), Poka-Yoke and also Suggestion System. (Masaaki, 2006; Ma et al., 2017)

It should be emphasized that it is people who make changes towards the better through indication and next elimination of defects and problems in the system. (Lachiewicz & Matejun, 2007; Dziuba & Ingaldi 2016) Each employee can take actions towards the improvement in their own workplaces and suggest changes concerning the whole process. This integration of the thinking process at each stage of production does not only develop employee skills but also builds their awareness and activity in striving for the improvement and searching for new and better solutions. As can be noticed, the assumptions of the method suggest investments in staff rather than technology: the emphasis on the thinking process and decisions made by employees are opposed to the conventional approach to mass production, with its essence being automation. (Skrzypek, 2011; Konstanciak, 2010)

The aim of the paper was to verify the opportunities for using the suggestion system to improve quality in selected production enterprises in three European countries: Poland, Slovakia and Czech Republic, with the results compared to each other. The authors expect that employees at the age under 40 years will be more engaged in the activities which are of interest of this study compared to older workmates since they are typically more open to innovations.

## 2. Suggestion System

An essential component of the implementation of the Kaizen management system is the Suggestion System. According to the literature, an idea or suggestion is understood to mean a proposal notified by an employee in order to facilitate his or her workplace or other areas in organizational processes. Effective use of the system is possible only if the adequate method to notify the ideas by employees is created. Therefore, many enterprises are implementing special organizational solutions in the form of formal programs. (Brophy, 2012; Efraimidis et al., 2016) Programs of employee's suggestions, based on the experience and involvement of staffs, noticeably contribute to facilitation of the processes and organizational problems, which points to their value. Furthermore, there are more benefits, with all matching the idea of the improvement of current status. (Japan Human Relations Association, 1997; Pustějovská et al., 2010; Kardas, 2016) The costs incurred by the enterprises are reduced while the employees are more motivated, with greater sense of association with the organization. Introduction of the postulated standards or practices contributes to the improvement in the quality and safety of

work at a specific workstation, whereas reluctance to accept changes decreases. These benefits result from the efficient and properly implemented process of using the suggestion system in the enterprise. The system is especially useful in those organizations which focus on continual improvement of processes, increasing intellectual capital and promotion of cooperation rather than on competition. (Robbins & Judge, 2011)

There are three stages in the process of implementation of the Suggestion System: encouragement, education and efficiency. The idea of the first stage is to help employees to provide even the most basic suggestions which concern their workplace and performed tasks. This role is assigned to managers who, through the development of the method to notify the suggestions, help their staffs to look at their own work from a new standpoint. The second phase is education and training for employees, who, equipped in adequate methods to recognize problems and to analyse and solve them, provide even better suggestions for changes. A key element in this phase is to provide knowledge to employees. The focus of the last (third) stage is on efficiency. On the one hand, this means suggestions of motivated and trained employees and, on the other hand, economic verification of the applications conducted by the managers.

The benefits of the Suggestion System are universality of its assumptions. Even in a well-managed enterprise, there is a need and opportunities for the use of the ideas derived from employees. This is mainly connected with the dynamics of changes inside and outside the organization. The changes are observed in the area of the processes, products or technologies or materials. Modifications concern customers' requirements, legal and social determinants and the locations the specific work is done. (Massaki, 2007; Gohary et al., 2016)

### **3. Methodology**

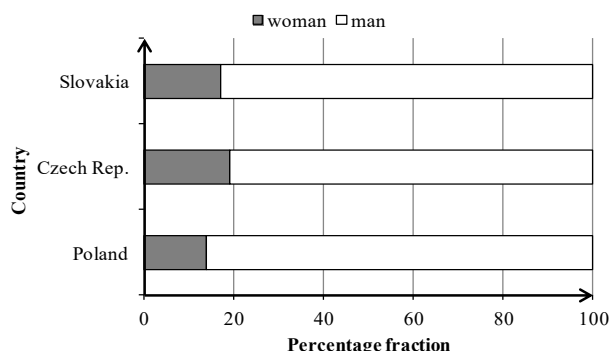
The study concerned the use of the suggestion system in the enterprises of the steel sector in individual countries. Empirical examinations were based on free-form interviews with managers and employees. The study took into consideration the suggestions from the years 2012-2016.

The particular focus was on showing the variation in the use of this tool by employees at different age. A method based on case study was employed due to the qualitative character of the research problem. The participants were employees from three metal sector enterprises, from Poland, Czech Republic and Slovakia. Enterprises in Poland and Czech Republic belong to the same concern.

### **4. Results**

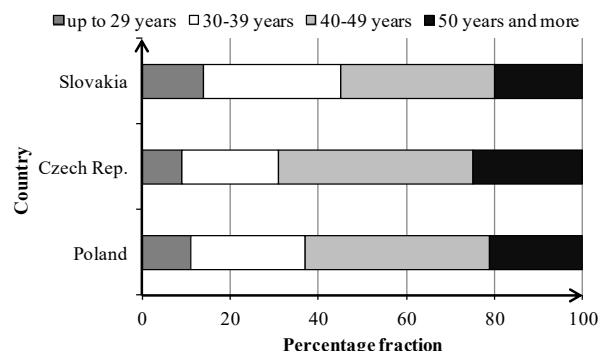
Figures 1 to 3 presented the structure of employment in the enterprises in each country. It is noticeable that these structures are similar to each other, which is connected with the sector in which the study was performed. The enterprises from the metal sector mainly employ men, whereas women tend to work in offices and perform tidying jobs. Due to the difficulties in obtaining comprehensive information from the enterprises for the period studied, these structures meant mean rates of employment in 2016. It should be remembered that the age and work experience are correlated with each other.

Figure 1: Characteristics of respondents - gender



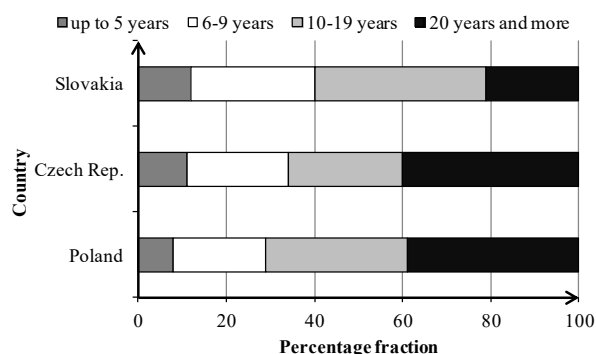
Source: own study

Figure 2: Characteristics of respondents - age



Source: own study

Figure 3: Characteristics of respondents - work experience



Source: own study

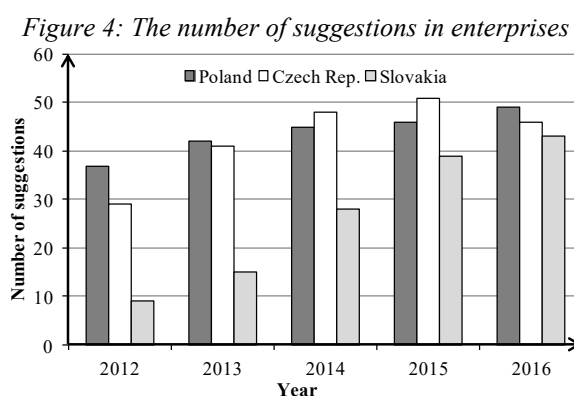
All the three enterprises studied have implemented suggestion systems. In the enterprises in Poland and Czech Republic, these systems are similar to each other, which results from the association to the same corporation. In these enterprises, the goal and area which should and can concern the Suggestion System was determined. Its priority task is to initiate the activities which facilitate and improve processes occurring inside the enterprise. Therefore, the system relates to changes in the areas of technology, organization (of production), work safety and environmental protection. Its goal is to save time and cash, improve quality, workplace and the final product as well as to improve safety and activity towards the environment. The general regulations specify that the author of a suggestion can be an employee or a group of people who are production workers. The solution to the problem should be the idea proposed by the author or authors rather than the implementation of the official orders from the manager. All the ideas that meet formal determinants of suggestions are placed in the respective database. Within a month, the appointed team evaluates the suggestion while taking various areas into consideration: safety, ergonomics, efficiency, quality, environment and costs. If an idea is accepted, the originator (or several originators) obtains adequate gratification. In Poland, maximal gratification is 4,000 PLN, depending on the idea for individual areas. In Czech Republic, this level is 25,000 CZK. Suggestion systems have been used for some time in both enterprises, which will be reflected by further comparisons.

A similar system is used in the enterprise in Slovakia. The enterprise developed its own Suggestion System. The system mainly incorporates technical and organizational facilitations but it also accepts other facilitations which would substantially help enterprise function. The evaluation is made by a team composed of the enterprise's managers. The team meets once a quarter a year and evaluates the usefulness of the idea. Adequate gratification of up to 800 Euro

can also be expected depending on the effect the idea has on the improvement of the enterprise functioning. The system was developed at the end of 2011.

Figure 4 presents a general number of suggestions in individual enterprises in 2012-2016. It can be observed that the Suggestion System in the case of the Slovakian enterprise just started to operate, since in 2012, employees made only 9 suggestions but year by year, this number was increasing. It can be concluded that in the beginning, employees either were not familiar with the system or they did not know how it operated. It is likely that in the beginning, they were unwilling to come up with ideas since they did not believe the system could work effectively. The increasing tendencies were observed in two other enterprises.

The annual mean in the Polish enterprise was 43.8 suggestions, whereas this number was 43 in the Czech enterprise and 26.8 in the Slovakian enterprise.



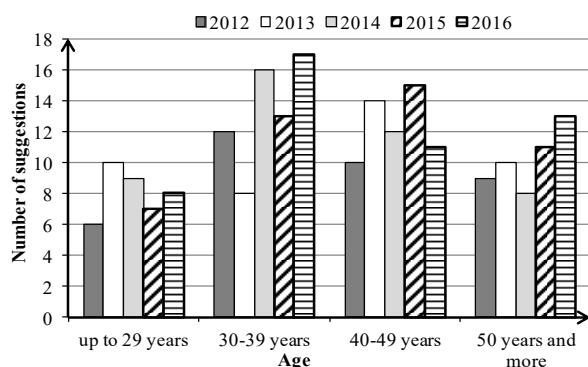
*Source: own study*

Figures 5-10 present a comparison of the suggestions with division into individual age groups in individual enterprises. The data were compared quantitatively and with respect to the percentage share of individual age groups. The division according to gender was abandoned since the manufacturing employees who proposed most suggestions are exclusively men. No comparison was made with division in terms of work experience since this characteristic is largely correlated with the employee age.

In the case of the Polish enterprise, the most of suggestions in individual years were made by employees aged 30 to 39 years and 40 to 49 years. It should be emphasized that these two groups were the most numerous in terms of employment. With the percentage structure of the employees, the most of the suggestions were reported in the case of employees aged up to 29 years.

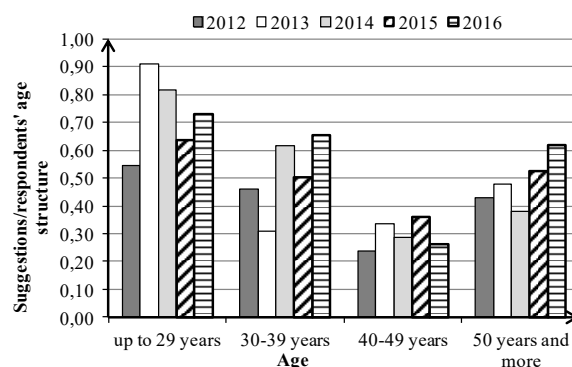
Similar situation was reported in the Czech enterprise, but the employees aged over 50 years made insignificantly fewer suggestions than the employees aged 40 to 49 years. However, with respect to percentage of individual age groups, a tendency for more suggestions made by the youngest employees was found, with employees aged 30-39 years also significantly active.

Figure 5: Number of suggestions with division into age groups: Poland



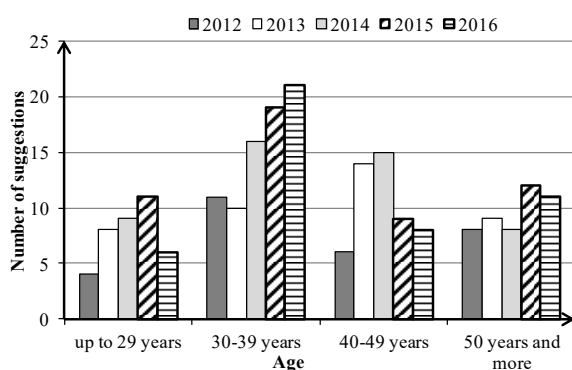
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Figure 6: The suggestions referred to percentage of individual age groups: Poland



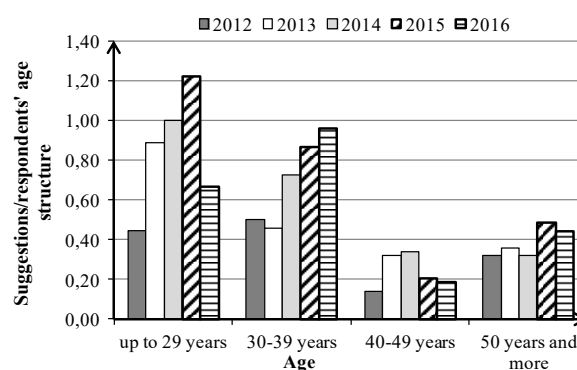
Source: own study

Figure 7: Number of suggestions with division into age groups: Czech Republic



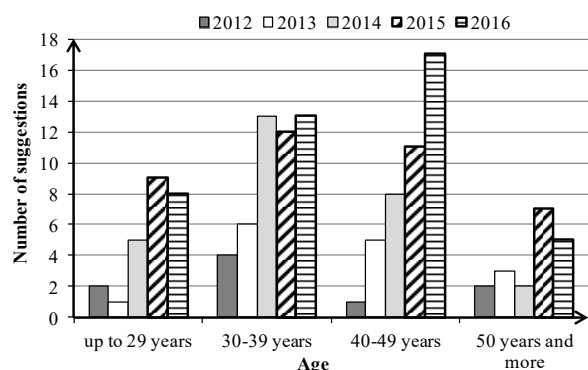
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Figure 8: The suggestions referred to percentage of individual age groups: Czech Republic



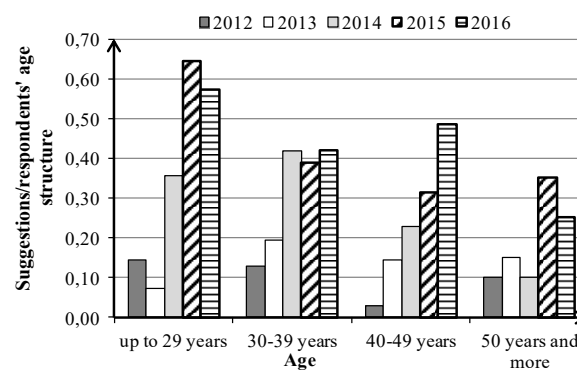
Source: own study

Figure 9: Number of suggestions with division into age groups: Slovakia



Source: own study

Figure 10: The suggestions referred to percentage of individual age groups: Slovakia



Source: own study

With Slovakian enterprise, it should be emphasized that the suggestion system operated much shorter than in the case of other two enterprises. However, analysis of the results confirmed again that in terms of the number of suggestions, the employees aged 30 to 39 years and those aged 40 to 49 years were most numerous. Comparison of the results to the age structure shows that most suggestions were made in age groups of up to 29 years and 30 to 39 years. Differences in the results are insignificant. Consequently, it is difficult to point to a dominance of any of the groups directly by referring to the figure.

In the case of the enterprises from Poland and Czech Republic, the study confirmed the thesis that employees at the age under 40 years will be more engaged in the activities which are of interest of this study compared to older workmates since they are typically more open to innovations. A similar situation was observed in the Slovakian enterprise. However, this tendency was not as noticeable as in the case of other two enterprises.

## 5. Conclusion

The examinations show that the active attitude towards the Suggestion System is not only limited to the young and middle-aged employees but is also characterized by those with professional experience. However, it is younger employees who most often make suggestions and ideas which can facilitate operations in the organization.

Very important elements which help the suggestion system function properly is a transparent and comprehensive regulations for facilitations and the simplified sheet for suggestions. A creative and interesting viewpoint on many problems presented by young people was combined with a solid knowledge and many years of experience of older employees. Mutual exchange of thoughts and information became the field for creation of innovative solutions in problematic areas.

Therefore, it should be expected that the adequately prepared and operating suggestion system can become the element of motivation among the employees but it can also lead to many immeasurable benefits to the organization and its functioning.

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# EVALUATION OF FOOD PRODUCTS IN THE CZECH AND FOREIGN ONLINE SHOPS WITH A SPECIAL FOCUS ON GLUTEN-FREE PRODUCTS FOR CONSUMERS AFFECTED BY THE GLOBAL PROBLEM OF GLUTEN INTOLERANCE

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**Abstract.** Many individuals around the world have a gluten intolerance problem. It can be concluded that this is a global health problem and consumers with this disorder require specific gluten-free food products. This article aims at exploring the market for gluten-free foods on the Internet in the Czech Republic. The availability of gluten-free foods depends on the behaviour of consumers, especially on the Internet. In this research, about 100 surveys were conducted in many different online shops offering gluten-free foods in the Czech Republic and Slovakia. Online shops in this research were divided into two categories, specialized gluten-free online shops and general food online shops. The aim of this research is to evaluate and compare the prices of gluten-free foods in these online shops, as well as to map the range of gluten-free foods on the internet. Several basic assortment groups were identified for this research. Selected products are of international production, and the interconnection between the national markets of gluten-free foods is evident in this article. Apart from foods of Czech production, a whole range of gluten-free foods from different European countries are available on the Czech gluten-free food market. The individual items selected for this research have specific properties that affect their share in the offer of internet retailers. In the further text, this article aims at creating an overview of specialized gluten-free online shops that will monitor: the way of distribution, the existence of a brick and mortar store, the goods offered and its quantity.

**Keywords:** celiac disease, gluten-free, consumer, supply, food

**JEL Classification:** I12, F14, P46

## 1. Introduction

Gluten intolerance is an autoimmune disease of the small intestine that cannot process the protein known as gluten. This disease is called celiac disease. Košičiarová et al. (2015) define celiac disease as a genetic autoimmune disorder that damages the small intestine and impairs the absorption of nutrients from food. As they describe, this disorder is triggered by the protein called gluten, which is contained, for example, in wheat, barley, or rye. Other diseases, such as



lymphocytic gastritis and chronic gastritis, are associated with celiac disease. (Lebwohl, 2015) In Czech population celiac disease remains underdiagnosed and frequently diagnosed at a late stage. The Program of “Targeted Celiac Disease Screening” published by Czech Ministry of Health may enable to reveal the extensive population of undiagnosed celiac subjects and start their therapy with gluten-free diet. (Frič & Keil, 2011)

The only treatment option is lifelong adherence to gluten-free diet. (Lee et al, 2016) However, Anderson (2008) adds that even a strict gluten-free diet, which is necessary for patients with celiac disease, often does not lead to normalization of small bowel histology in adults. At present, methods are available to accurately diagnose celiac disease, in particular based on the knowledge about the origin and development of this disease in the human body. It is therefore possible to diagnose celiac disease early in its course and then introduce a gluten-free diet. (Schuppan & Zimmer, 2013) Given that following a strict gluten-free diet can be difficult, evidence-based strategies are needed to improve the psychological experience of living with celiac disease and following the gluten-free diet. (Dowd & Jung, 2017)

Gluten-free diet, however, has also a negative effect on patients with celiac disease. Lee (2012) reports a correlation between the adherence to gluten-free diet and negative impact on the quality of life, in particular in the social field. The extent of these impacts varies among children, adolescents and adults. Due to the negative socioeconomic impact of a gluten-free diet, healthcare providers should be aware of this issue and provide guidance and appropriate psychological support to patients with this diagnosis. (Sarkhy et al., 2016) With the increasing number of patients requiring a gluten-free diet, their needs and requirements for the availability of gluten-free foods will grow both in shops and in catering facilities. (Šálková & Hošková, 2016) Consumers with this diagnosis are an increasingly important customer segment for manufacturers and distributors of gluten-free food, but also for restaurant operators. Food manufacturers and distributors, as well as restaurant operators, should be motivated by the growth of this segment, to be socially responsible to the aforementioned population group, thus creating the same living conditions related to the quality of food as in other consumers. (Šálková & Hes, 2015)

A high price, often exceeding the purchasing power of celiacs, is usually the most limiting factor in the sale of gluten-free foods. However, Šálková et al. (2017) report that this assumption has not been confirmed in their survey, as patients with this disease hold a gluten-free diet for health reasons rather than from their own will, so they have to buy these products regardless of their price. The availability of gluten-free food in retail outlets was also studied by Burden et al., (2015), who report in their research conducted in the Great Britain, the good availability of gluten-free foods in common, high-quality supermarkets and online shops. However, the price of these foods remains considerably higher. Discount and low-budget stores, which sell to lower socioeconomic classes, offer almost no gluten-free foods. Poor availability and higher costs for gluten-free foods are likely to negatively affect the adherence to the gluten-free diet at lower socioeconomic classes. (Burden et al., 2015) In light of these higher prices of gluten-free food necessary for a gluten-free diet, creation of national subsidized programs should be considered to support patients with celiac disease. (Lambert & Ficken, 2016) In the Czech Republic, celiac disease is taken into account when assessing the amount of the living allowance for persons receiving benefits in material need and child care allowances, in while in other cases, the system of allowance for gluten-free diet is operated through health insurance companies. (celiak.cz, 2016)

The availability of food for gluten-free diet offered in online stores was analyzed through the search of online food shops on the Internet and the subsequent examination of the goods offered on these internet shops. This survey was conducted from February until May 2017. The aim of the survey was to map the range of products in online shops offering gluten-free foods via the Internet and the overall assortment and prices of gluten-free foods on the internet. In each survey, the following was mapped in the online stores:

- Method of distribution of goods
- The number of items offered in each product group (flour, pasta, sweets, porridges, beverages)
- The price of selected product groups have been examined in selected online shops.

The data obtained were evaluated using Microsoft Excel 10 in the form of descriptive statistics and subsequently processed into tables or charts.

## 2. Gluten-free foods in online shops

At present, the range of gluten-free foods is constantly expanding. They have not only expanded from specialized nutrition stores into regular grocery stores, but they have also become increasingly available in online shops. This survey examines the range of products offered in specialized online shops, including both the depth of individual product groups and their price.

### 2.1 Evaluation and comparison of prices of gluten-free foods in Czech and Slovak online shops

This part of the survey focuses on assessing the prices of individual product groups of gluten-free foods in order to determine the product group of gluten-free products, which is the most expensive to buy for consumers. In addition, the survey compared the prices of the respective product groups between Czech (Tab. 1) and Slovak (Tab. 2) online shops based on average prices for individual items.

Table 1: Average prices of gluten-free foods in online shops in the Czech Republic

ITEMS CZECH REPUBLIC	AVERAGE PACKAGE WEIGHT (g)	AVERAGE PRICE PER PACKAGE (CZK)	AVERAGE PRICE PER 1 KG (CZK)
bread	381.04	63.25	191.64
fresh baked goods	218.00	52.57	276.15
biscuits	142.12	54.65	430.31
flour	570.53	72.70	157.49
instant products	225.33	48.37	322.87

Source: own processing

The table above shows the average prices of respective product groups of gluten-free foods per package and, for better comparability, they are also recalculated per kilogram. In addition, it also shows average weights of retail packs in which gluten-free foods are sold to consumers. These are prices of product groups in Czech online shops.

The highest average retail package weight was found in the product group "flour" (570.53 g), while the lowest retail package weight was found for the product group "biscuits" (142.12 g).

Regarding the average recalculated price (per 1 kg), the cheapest gluten-free product group was "flour" (157.49 CZK/kg), which is the basic ingredient for the preparation of various gluten-free meals. The most expensive group is "biscuits" (430,31 CZK/kg), which is the final product intended for direct consumption. The lowest average price per unit of packing is

recorded for the group of "instant products" (48.37 CZK/pack), while the highest average retail price was found for the group "flour" (72.70 CZK/pack).

Table 2: Average prices of gluten-free foods on online shops in the Slovak Republic (prices are converted from EUR to CZK according to exchange actual rates)

ITEMS SLOVAK REPUBLIC	AVERAGE PACKAGE WEIGHT (g)	AVERAGE PRICE PER PACKAGE (CZK)	AVERAGE PRICE PER 1 KG (CZK)
bread	346.07	79.75	250.05
fresh baked goods	238.51	73.12	353.53
biscuits	135.79	56.49	426.17
flour	690.48	82.14	129.75
instant products	231.89	60.94	536.51

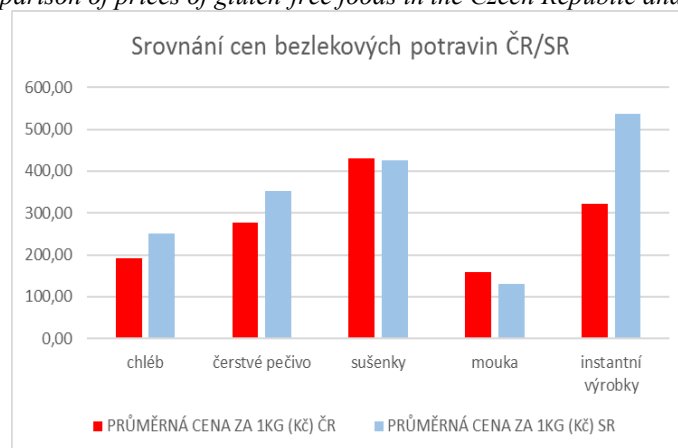
Source: own processing

Groups with the highest and lowest average package weight are the same in Slovak and Czech online shops, the highest weight of the retail package was recorded in the group "flour" (690.48 g), while the smallest retail package was recorded in the group "biscuits" (135.79 g)

It is evident from the table showing the average recalculated prices of gluten-free food products in Slovak online shops that the most expensive product group in prices converted per kilogram is "instant products" (536.51 CZK/kg). The cheapest item is the product group "flour" (129.75 CZK/kg). For consumers, the most expensive group in terms of package unit is "flour" (82.14 CZK/package) and the cheapest is "biscuits" (56.49 CZK/pack).

When comparing the average prices of product groups in the Czech and Slovak online shops, the most expensive product group was different, while the cheapest product group was the same (flour). The most expensive product group is "biscuits" in the Czech online shops, and "instant products" in the Slovak online shops.

Figure 1: Comparison of prices of gluten-free foods in the Czech Republic and Slovak Republic



Source: Own processing

It is evident from the graphical analysis of average recalculated prices of product groups of gluten-free foods (Fig. 1) that the price of groups bread, fresh pastry, and instant products is higher in Slovak online shops, while it is lower for "flour" and "biscuits".

## 2.2 Overview of Czech special gluten-free online shops and their products

The number of online shops selling food products in the Czech Republic is steadily increasing, which is also associated with an increase in the number of online shops specialized in selling gluten-free foods. This survey identified 30 online shops that primarily sell food for

gluten-free diet. The table below shows online shops, which offer more than 100 products in the sum of the selected product groups (Tab. 3).

Table 3: Number of items of gluten free product groups

Specialized gluten free online shops	flour	pasta	sweets	porridges	beverages	total number of items
dia-potravy.cz	111	28	72	52	73	336
spolu-bez-lepku.cz	44	55	103	85	7	294
dibeo.eu	61	20	62	21	53	217
bezlepkova-dieta.eu	26	39	68	15	5	153
celiakshop.cz	50	29	22	49	0	150
celiatica.cz	35	78	9	17	2	141
balviten.cz	32	29	41	20	10	132
bezgluten.cz	25	23	64	12	1	125
bezlepku.net	28	30	50	9	1	118
celidia.cz	22	27	31	11	15	106
probiocelia.cz	26	24	25	24	6	105
bezlepkovaprodejna.cz	22	21	43	12	6	104
havita.cz	53	26	3	16	2	100
Total	535	429	593	343	181	

Source: Own processing

The observed items included: flour, pasta, sweets, porridge and beverages. In the overall product range offered by selected sellers, we can see the largest depth of assortment for the group "sweets", where the gluten-free variants are the most numerous (593 items) followed by the group flour (535 items). On the contrary, the smallest depth was recorded for the product group "beverages", which is probably caused by the fact that the majority of beverages are gluten-free by nature.

The method of distribution, as one of the major problems of Internet sale, is addressed similarly by the examined online shops. The most common variant for moving goods to consumers is the use of shipping companies (PPL, GLS, DPD, Geis), often combined with the possibility of delivery via Czech Post. In addition, networks of dispensing/pick-up points are widely used, which are directly intended for e-commerce (Zásilkovna, Uloženka). Only 11 of researched online shops have "brick and mortar" variant, that is approximately 36% of specialized gluten-free online shops in Czech republic. These shops are presented in table below (Tab. 4).

Table 4: Online shops with "brick and mortar" stores

Specialized gluten-free online shops	"brick and mortar" shop	"brick and mortar" shop in regions
eshop.shprodiet.cz	yes	Ústecký
dia-potravy.cz	yes	Praha
celidia.cz	yes	Praha
labeta.cz	yes	Pardubický
bezlepkovaprodejna.cz	yes	Moravskoslezský, Olomoucký
labuznikceliak.cz	yes	Moravskoslezský, Olomoucký
svetbezlepku.cz	yes	Moravskoslezský, Zlínský, Olomoucký, Praha
freegluten.cz	yes	Královéhradecký
dovesfarm.cz	yes	Jihomoravský, Ústecký, Plzeňský
spolu-bez-lepku.cz	yes	Jihomoravský
bezklasu.cz	yes	Jihomoravský

Source: Own processing

Only eleven of those specialized online shops offer gluten-free products also through classic "brick and mortar" stores. These retail units are located in 9 regions of the Czech Republic, most often in the Jihomoravský, Moravskoslezský, Olomoucký and Prague capitals. So, gluten-free online shops has coverage of "brick and mortar" shops in 64,2% regions in Czech republic. From the above-mentioned table (Tab. 4), online shop which conduct "brick and mortar" shops in most regions (svetbezlepku.cz) conduct them only in four regions. (28,5 % of regions in Czech republic) This means that the primary business for online shops is e-commerce.

### 3. Conclusion

Based on the survey, it can be concluded that a number of online shops specializing in the sale of gluten-free food products are operated in the Czech Republic, and the range of their products is relatively wide. Differences were also found in the prices of gluten-free foods between the Czech Republic and Slovakia. A significant depth of the product range was found for the majority of selected groups of gluten-free food products. A satisfactory depth of the assortment is related to the fact that the group of celiac disease patients is a significant segment for food retailers, and they try to provide them with a satisfactory offer. The way of distribution, which is a major factor in the purchase of food, is addressed by online shops through shipping companies or companies operating pick-up points for e-commerce. Shelf-life may be a limiting distribution factor in some product groups. The next step towards approaching the celiac disease segment could be the creation of delivery services in combination with catering facilities for gluten-free food.

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## PROBLEM OF RECEIVABLES MANAGEMENT AND DEBT RECOVERY IN AN ENTERPRISE IN THE AGE OF GLOBALIZATION

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**Abstract.** In recent years - characterized by the dynamic development of capital markets in times of globalization - the need for full, timely and reliable information on receivables management and recovery is increasing. In the conditions of Polish economy transformation and progress in business conducting, which has started in the 20<sup>th</sup> century and is still happening, managing business creates the necessity to use modern management tools in the field of accounting. In business units one of the basic problems is the limited cash. Faced with this problem, the main criterion of economic activity is the rationality of using resources and the means of obtaining them, which involves searching for more efficient ways of managing receivables. Checking receivables is critical to maintaining financial liquidity and business performance, and helps managers make sound decisions. The article presents the role and importance of receivables management of an enterprise and their importance to improving the efficiency of business entities. The research methods applied are based on the study of literature from the examined area and analysis of receivables management in the audited entity. These methods will be presented in the context of their usefulness in managing liquidity. The basic hypothesis is the assumption that proper management of receivables contributes to the positive cash flow of the entity.

**Keywords:** receivables, globalization, management, receivables management, financial liquidity.

**JEL Classification:** M11, F65, M41

### 1. Introduction

In the times of globalization, the main goal of a company is to generate profits and minimise losses. However, this is largely dependent on the reliability of the company's contractors. An increasing number of enterprises struggles with the problem of payments not being settled in due time, which disturbs financial liquidity and hinders the functioning of the company. Overdue receivables create additional problems connected with their monitoring and collection.

In the era of globalization, it is impossible to imagine a company functioning without people and units dedicated to managing finances, including the accounts receivable. These operations are often a decisive factor in the success and, sometimes, failure of the company. In an enterprise operating in the material and financial area we are looking at a constant circulation of capital. The basic components of the company's current assets are the receivables, reserves and funds. (Kyriashko, 2008) Every change to the structure of the assets changes the relation between risk and return from the company's activity. (Emerling, 2014) The key problem

becomes the choice between actions aimed at increasing the sales and receivables of the enterprise and actions aimed at increasing its funds. (Gup, 1985)

Strong competition and constant change of the external conditions cause the management to make decisions towards a more liberal supply policy, which translates to longer payment and debt collection periods. We should keep in mind that prolonging the payment and debt collection periods does not always contribute to the increase in sales revenues and positive financial results. Not only future profits, but also the debt maintenance and collection costs should be taken into account. (Krzemińska, 2005) Minimising the risk connected with the loss of receivables as well as improvement of the company's fluidity should be the continuous goal of an enterprise. (Siekelova & Gregova, 2016) Quantitative and qualitative methods of contractor reliability assessment, precautionary measures as well as monitoring can be used to this end.

The present article presents the role and significance of receivables management in a company as well as its importance to the improvement of efficiency of business entities. The research methods applied are based on the study of literature from the examined area and analysis of receivables management in the audited entity. The basic hypothesis is the assumption that proper management of receivables contributes to the positive cash flow of the entity.

## **2. Globalization and its significance to the quality of conveyed information**

Globalization is the superior, more advanced and complex stage of the process of internationalisation of business activity. globalisation of economy means the internationalisation of economy, i.e. the emergence of a uniform worldwide economy based on a free flow of all goods, services and capital. (Bielikova & Paliderova, 2016) The basic characteristics of globalisation therefore include the increasing mobility of capital, goods and services, dynamic technological development and fast spread of innovation, creation of a worldwide information system, liberalisation of many areas of business activity, opening of economies to international trade, decentralisation of production and manufacturing processes as well as centralisation of capital and management. (Emerling, 2015)

Globalization of economy provides many opportunities connected with an increased openness of national markets, which manifests through, among others, the levelling of developmental differences and a sense of common interest. However, it also gives rise to great dangers, such as economies being volatile to all types of crises and crashes in the world markets. (Zaorska, 2004)

In the conditions of globalization, very precise, reliable and comparable information conveyed to the report recipients becomes of special importance. This information pertains to both the material and the financial area of a company. reliable information about the structure of assets and liabilities, including receivables, is paramount to the proper assessment of a company.

## **3. The significance of monitoring in reducing the risk of bad debt**

Monitoring of receivables refers to a continuous assessment of both the level and the structure of accounts receivable that arise due to the completed sales of products and services. (Siekelova, 2015) Analysis of receivables should facilitate supervising their timely payment and the proper length of billing cycles with the recipients. Receivables with the highest share



as well as the longest standing debts should receive special attention. Receivables of this type are encumbered with the highest risk and their occurrence can lead to payment difficulties. (Hass-Symotiuk, 2010) Properly adjusted and utilised, methods of receivables level control can help to (Śnieżek, 2014):

- achieve the optimal level of trade receivables allowing for the correct development of the company (a level which generates positive cash flow),
- minimise the excessively high level of irrecoverable receivables due to the so-called bad debts (sums to be encompassed in a write-off due to loss of value),
- prognosticating cash flows.

Different methods of financial analysis are used to assess receivables. The conclusions of the assessment are the basis for the verification of the credit policy applied to the recipients. The size of the company's receivables is assessed by comparing their growth rate to the growth rate of sales. In cases where receivables grow faster than sales, the scope of customer lending increases. On the one hand, this may be a deliberate corporate policy aimed at increasing its market share. On the other hand, an increased share of receivables may translate to low efficiency of debt collection, which in turn may lead to bad and overdue debts. (Sierpińska & Wędzki, 2001)

By monitoring corporate receivables, the company can save itself from losing revenue, reduce debt recovery costs, improve liquidity, and reduce the risk of bad debts.

#### **4. Receivables management as an instrument for reducing the lack of liquidity**

Debt management can be defined as a process aimed at preserving financial liquidity by preventing the emergence of overdue receivables and effectively recovering unpaid dues at the settlement, court case and enforcement stages. (Kroes, 2016) The receivables management process consists of the following three stages (Bekas, 2013):

- prevention – preventing the emergence of overdue payments,
- monitoring – control of receivables inflow,
- debt collection – recovering overdue payments.

The success of receivables management largely depends on the actions that were taken before the receivables were made, and even long before that moment. (Soucek & Kubickowa, 2012) The receivables management process can be divided into two parts, which cover both strategic and operational activities, as illustrated in Figure 1. The operational activities related to the complex receivables management process should be preceded by strategic actions that include, among others, the development of a policy of contractor financing that is in line with the company's operating strategy and its business objectives. The strategic actions taken in the management of receivables are aimed at (Kreczmanska-Gigol, 2015):

- preparing to act within receivables management so that the process is consistent with the strategy of the company and contribute to achieving the company's goals,
- smooth and transparent functioning of the receivables management process, to increase its efficiency,
- creating conditions for the maximisation of efficiency of the receivables management process. (Michalski., 2007; Michalski, 2008)

The objective of operational activities undertaken in the management of receivables that are not overdue (actions preceding the debt recovery stage) is:

- identification and measurement of risk to reduce asymmetry of information between the company and its contractors,
- improving the effectiveness of risk identification and measurement, adjusting the company's sales conditions to the level of risk,
- increase the likelihood of recovery in case of possible disputes and lack of payment on the part of the contractor,
- reduction of credit risk, i.e. the risk of non-payment,
- creating the possibility of a rapid response to the increased risk and thus limiting the amount of possible losses,
- increasing the efficiency of recovering overdue receivables,
- control of the effectiveness of credit sales,
- monitoring credit risk to reduce asymmetry of information and related negative effects,
- enabling rapid action in case of an increase in risk.

Another line of action frequently taken by the management staff is insurance in risk management. (Božek & Emerling, 2016) Synthetic benefits resulting from covering receivables with insurance are, for example, protection against the insolvency and bankruptcy of contractors, reduction of write-offs, resulting in increased financial results, ability to enforce write-downs by the insurance provider, improving the company's financial liquidity, improving competitiveness by offering better payment terms, reducing the costs connected with debt collection and many others. (Michalski, 2012)

Debt collection is the final step in the receivables management process. The primary purpose of debt collection operations is to obtain payment for goods or services in the shortest possible time and with the lowest financial and organizational commitment.

In summary, debt collection is a process of recovering overdue receivables, which encompasses all lawful debt recovery actions by voluntary repayment to the creditor by the debtor or by a third party, as well as judicial enforcement of property rights, meaning all actions seeking to recover debts using the coercive power of the state that protects property rights. (Kreczmanska-Gigol, 2015)

## **5. Receivables management policy on the example of a company**

The researched unit was established in 2000 as a subsidiary of a leading German company in the European lighting market. At the turn of 14 years of activity, it is the exclusive distributor of lighting products for the network of home-improvement and construction stores and other customers located in Poland.

The main assumptions of the company's credit policy are:

- execution of an order exceeding the allotted credit limit is possible only after payment of previous liabilities (also not overdue) to an amount not exceeding the amount of trade credit,
- a delay of more than 14 days or a delay of two consecutive payments by 7 days causes the buyer to lose the credit limit until it is re-assigned on the basis of an analysis of further cooperation,
- the date of payment is considered the date of crediting of the seller's account,

- in the event of the debtor's failure to pay within the agreed period, the seller has the right to suspend delivery until the payment is done and reserves the right to change the due date,
- as a security for the supply of ordered goods, the buyer submits a blank promissory note to the seller, or the parties to the contract may agree on other forms of payment insurance,
- in the event of payment not being paid by the buyer within the specified period in spite of calls for payment, the seller reserves the right to initiate the debt collection process,
- termination of contract – the contract is concluded for an indefinite period and each party has the right to terminate the contract at a 30 days' notice.

The time of payment also depends on the contractor, his cooperation history and the size of the order. Most often this period is within 30-90 days. In the case of stocking up of the store this period is extended to 180 days, of course also under the condition of prior proper cooperation. Monitoring of receivables is carried out by the company's internal unit.

The company studied uses the so-called age structure for the monitoring of overdue receivables. Shown below is a table showing the age structure of receivables of the analyzed company cumulatively in the years 2014-2016.

Table 1: Table of the age structure of receivables (cumulative) for the years 2014-2016

Year	Debt amount	0-7 days	8-15 days	16-30 days	31-60 days	61-120 days	Over 120 days
<b>2016</b>	<b>178 248.45</b>	<b>101 257.01</b>	<b>10971.1</b>	<b>16 204.93</b>	<b>18 003.82</b>	<b>904.20</b>	<b>30 907.39</b>
<b>2015</b>	<b>185 356.50</b>	<b>110 213.50</b>	<b>5 567.44</b>	<b>15 334.60</b>	<b>16 556.20</b>	<b>3 570.40</b>	<b>34 114.36</b>
<b>2014</b>	<b>187 660.36</b>	<b>120 540.60</b>	<b>4 776.80</b>	<b>16 440.20</b>	<b>10 640.80</b>	<b>890.56</b>	<b>34 371.40</b>

Source: Own elaboration based on the company's data

In the studied enterprise, the largest share in the period 2014-2016 consists of non-overdue receivables, which indicates the good management of receivables. The last column in Table 2 is worth special attention, showing the outstanding debt due to receivables that are overdue by over 120 days. This kind of receivables, if they do not result from the aforementioned stock-up, become problematic payments. In the studied enterprise their share in the years 2014-2016 is relatively stable. It does not exceed 19% and in was reduced in 2016.

Table 2: Sales in the years 2014-2016

Year	Insured sales	Percentage share of insured sales in total sales (%)	Sales revenue
<b>2016</b>	<b>201486.36</b>	<b>85.46</b>	<b>235 766.86</b>
<b>2015</b>	<b>155258.69</b>	<b>69.35</b>	<b>223 876.98</b>
<b>2014</b>	<b>145155.52</b>	<b>70.20</b>	<b>206 774.25</b>

Source: Elaboration based on the company's data

In the studied company, the share of insured sales increases year by year. This may indicate that receivables insurance is a tool to minimize the risk of bad debt in the company. The share of insurance sales also increases from period to period.

Table 3. Liquidity in the years 2014-2016

Year	2014	2015	2016
<b>Current liquidity</b>	1.52	1.54	1.69
<b>Quick liquidity</b>	1.45	1.47	1.58
<b>Cash to debt ratio</b>	0.15	0.18	0.23

Source: Elaboration based on the company's data

The receivables management policy in the studied entity contributed to the its very good liquidity. Liquidity ratios improve from period to period. The company has no problems making its current payments. It is cashable.

In the studied enterprise amicable debt recovery is first carried out after recording a payment overdue by more than 7 days after the due date specified on the invoice. This is carried out through contacting the customer via telephone to determine the cause of the lack of payment. If the company has the opportunity to set a new repayment date with the client, its sales representative will go to the debtor's offices for a personal interview. After that the company sends a reminder via email.

When the above methods fail the company sends the first payment request via a registered letter with acknowledgment of receipt. If this form of reminding the customer does not work, the case is forwarded to the debt collection company.

## 6. Conclusion

Nowadays, more and more companies fail to pay their dues for purchased goods or services in time. Too much debt can cause the company to be forced to postpone planned investments or purchases in time, and payment problems may appear. Taking into account the inconveniences associated with emerging overdue receivables, more and more companies are paying particular attention to the potential for both prevention and minimisation of such debts. To this end, companies should inspect their future contractors before granting them an extended payment date or trade credit. Companies also place great emphasis on monitoring overdue receivables, as well as their insurance and debt collection. At present, companies have the option of conducting the debt collection process themselves or handing the case over to a debt collection company.

The firm is well secured by signing a commercial contract in the event granting a trade credit that includes a blank promissory note. In addition, the company conducts constant monitoring of receivables that are not regulated on time, and if they exceed a certain period, the company takes debt collection measures. This contributes to positive cash funds and positive financial results.

The research hypothesis assumed stating that correct management of receivables contributes to positive cash funds in the enterprise remains reasonable.

The use of debt management tools by managers and management staff contributes to faster recovery of receivables and more efficient business management. It also becomes a manifestation of good practices in the unit as it protects the company from risk.

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## THE DEVELOPMENT OF THE BUSINESS ENVIRONMENT IN CONDITIONS OF ECONOMIC INSTABILITY

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**Abstract.** The article is devoted to the analysis of the mechanism of development of the business environment through the using of the state-private partnership. The developed business environment presented as a necessary condition for achieving a high level of competitiveness of the national economy. In the conditions of economic instability, the efficiency of the national economy decreases, that requires the search of quality tools for solving this problem. The authors prove that a state-private partnership can be considered as such instrument because it combines the advantages of state and market regulation and may provide a solution to the problem of improvement of the business environment. Additionally, the state-private partnership assumes an effective interaction of institutions of the state and business in various directions of their activity. In this case, the state must exercise the functions of not only the partner, but also the organizer, coordinator and the customer for such interaction. These conditions contribute to the creation of a sustainable mechanism of reaction to socio-economic challenges of globalization. Thus, the creation of a quality business environment needs a combination of efforts of the following parties: the state, entrepreneurs, science and education. The using of the state-private partnership accelerates this process and makes it more planned, which is especially important in conditions of global instability.

**Keywords:** business environment, globalization, instability, state-private partnerships, transaction costs

**JEL Classification:** F01, F20, O10

### 1. Introduction

Periodically observed instability in the major global markets has a significant impact not only on the world economy as a whole, but also on the economy of each state. In this regard, there is a growing interest to search of models and mechanisms to minimize the impact of instability on the national economy and also correct the plans and the programs of economic development. Consequently, the tools of development must:

- minimize the external negative impacts and enhance the positive influence;

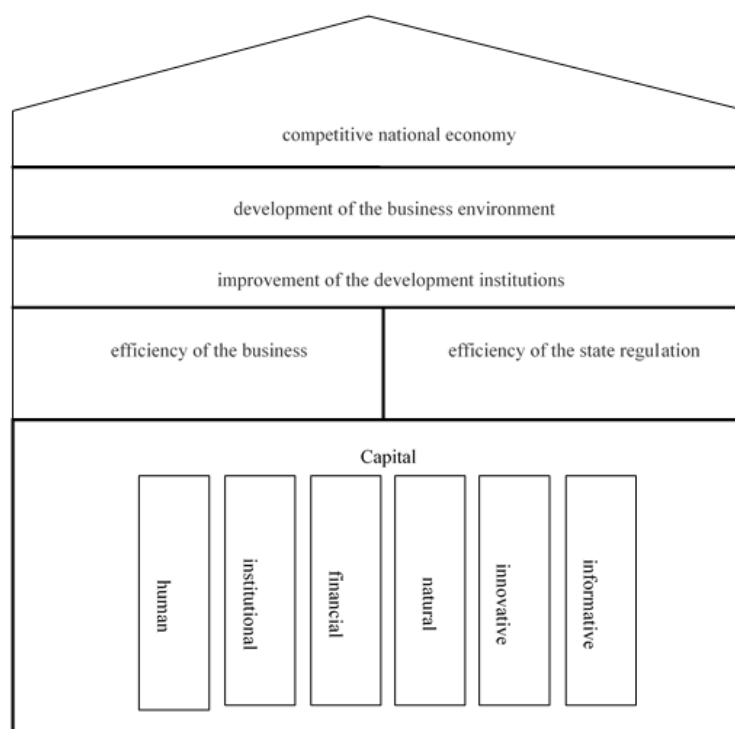
- connect the opportunities and the interests of business and state in development processes;
- attribute the interests of society as a whole, including the satisfaction of economic needs and providing of economic security.

Besides these three provisions we should pay attention to the changes in the global and national economies happening today. (National Audit Office, 2007) This instrument allows not only to implement some specific projects, but also to improve the business environment making it more adequate to occurring changes and competitive in conditions of globalization.

## 2. Body of paper

As we know, the business environment can be examined from positions of such sciences as marketing, management, entrepreneurship theory, risk theory, etc. Some certain differences in understanding of this category determine by the specifics of a particular field of scientific knowledge. In the context of the problem of the business environment it will be defined as the set of institutions, factors and conditions operating at different levels. They create the opportunities for economic development in order to ensure a high level of competitiveness of the national economy. The framework defining the status and direction of development of the business environment is capital availability to the entrepreneurs. A general scheme describing this relationship presented in figure 1. Taking this into account, in the process of the studying of the business environment we should pay the most attention to the macroeconomic level – the level of the state regulation and influence of the institutions of development. So, we can see the indirect impact for the development of the business environment forms. The achieved effect can be evaluated as positive, negative, and in some cases, neutral – when the influence of institutions on the business environment is absent or in a small degree. (Infrastructure at the Crossroads, 2005)

*Figure. 1: The general scheme of development of the business environment*



All the institutions influencing on the business environment should be classified and separate two groups: state and market (Tab. 1). From the point of view of management of development of entrepreneurship, the main vector of institutional impact should be aimed at reduction (minimization) of transaction costs. As a result, the effective institutional preconditions for improving the competitiveness of national business structures in the national and global marketplace will be formed.

*Table 1: The institutions ensuring the development of the business environment*

Plan institutions	Market institutions
State	Entrepreneurship
Public property	Private property
Planning	Privatization
Institute of law	Bankruptcy
Taxation	Pricing and contracts
Budgetary relations	Market exchange
Social guarantees	Firm
Distribution	Profit
	Competition
	Economic freedom

From this perspective, the analysis of dynamics of various indicators will be illustrative. The central place among these indicators belongs to transaction costs. This reflects a deepening division of labor between business and state, with its increasing role. In these circumstances, the efforts of all stakeholders in the process should be aimed at the preservation of a balance in the activities of the state and business. Effective feedback between the state and business, protection of interests of entrepreneurs can be provided in the format of the activities of different non-governmental organizations, associations, unions of entrepreneurs etc. (Zheng, 2006) The expected result here should be the improvement of national business environment.

The changes happening today create certain signals that are not always clearly perceived by the Russian business. One of the reasons for this can be considered as the heterogeneity of the country's business landscape – in size, fields of activity, degree of affiliation with the state, as well as many other parameters, making it overly sensitive to changes in the world economy and politics. (Liu et al., 2017) One of the brightest examples here may be the imposition of economic sanctions against Russia by the significant players in world politics and the global economy, and also our response. The effect of sanctions in the short, medium and long terms can generate both positive and negative tendencies for the development of various sectors of the Russian economy. Even the most cursory analysis of the current situation named by journalists the "war of sanctions", allows to posit: the winner side in business is absent here. (Wong et al., 2014) In conditions of crisis and new geopolitical challenges governments need to intensify the actions aimed at improving the business environment, stimulation of innovation activity, strengthening economic and other types of security and promoting the work of development institutions.

In recent years certain steps towards the revitalization of the tools of development have been taken in Russia: established investment funds and venture capital firms, increased the number of special economic zones, formed new clusters, etc. But now many of them are showing problems, especially – in connection with the introduction of economic and political sanctions against Russia. The establishment of effective communication platforms is only at an early stage and, therefore, needs to be further developed. As shown by our analysis, the entrepreneurs today are expecting about the rules of functioning of the business environment will significantly change under the influence of geopolitical factors (examples - recent events in tourism, aviation, banking, oil and gas business, etc.). In our view, the most important direction today is associated



with the definition of complex public services in the frames of coordination of actions between the state and business in the functioning of an effective business environment. It will minimize the loss of business due to economic sanctions imposed on our country. The solution of this problem requires of accounting the existing experience of the state-private partnership. For today's Russia, living in conditions of crisis and economic sanctions, the state-private partnership can be described as re-opening tool, which carries a lot of significant advantages. One of the most important questions in the process of regulation of the business environment is a question about the appropriateness, and sometimes – the necessity to unite financial, material, administrative and other resources of the state and entrepreneurs in the frames of the state-private partnership. This tool, in fact, becomes the mechanism allowing the state and businesses to implement the joint development of the business environment.

Today the world practice has formed fairly efficient instruments, providing the coordination of actions of the state structures and representatives of the business community in the implementation of important scientific-technical and innovative activities, although there are quite a significant number of problems. (New Projects Pass 'First, 2013) We are talking about advisory boards, commissions, associations etc. Some public authorities and representatives of business circles with the participation of academic and university scientists are working out the new forms of partnership. (Vertakova et al., 2014) This will make possible to consider the state-private partnership as an institutional and organizational alliance between the state and the business to implement socially significant projects in a wide range of areas: from fundamental and applied researching to the production of public goods. (A New Approach, 2012) Such alliance operates within a certain period of time, necessary for the implementation of a specific project, and ceases to exist after its realization.

We can see the association of resources and potentials of actors in the process of creation the state-private partnership. That is why it is an effective mechanism of increasing the competitiveness of the national economy through the attraction of new investments for the modernization of existing and creation of new production capacities, for the development of new technologies, including management sphere. (Gerrard, 2001) In Russia the technological scope and geographical spread of the state-private partnership has been rather limited until recently. (Reinhardt & Stavins, 2010) The causes related to the lack of reliable motivation of representatives of the state and business, as well as non-understanding of the nature of this type of partnership. The prospects of the state-private partnership often understand only as the possibility of attracting of budgetary finances with the participation of Federal or regional government.

The first attempt of mobilizing of global and local experience and scientific knowledge in this space was the initiative taken by the Federal government in 2000 under the slogan "Science–technology–production–market". Ministry of industry, science and technologies of the Russian Federation, Ministry of industry and science of Moscow region, Association of Siberian and Far Eastern cities, the Fund of assistance to development of small forms of enterprises in scientific-technical sphere, the Russian Found for technological development and the American Corporation "Russian Technology Initiative" were the organizers. In the result 12 mega-projects covering the full innovation cycle of applied researching were selected. It was expected that the funds received as a result of implementation of a megaproject should be, at least, five times larger than the amount of allocated funds from the Federal budget. But now the megaprojects make certain concern. This is due to the tangible presence of lobbying in the selection process. In addition, the question still remains to what extent these projects are really important for the country or region. The practice of implementation of the state-private

partnership in foreign countries shows that the allocation of budgetary funds needs the total analyzes of the subject content of the projects. It must be in line with national priorities and have a great potential, as, for example, improvement of institutions of the business environment. (Public Private Partnership, 2003) This requirement should be provided also in the Russian context. Currently in Russia we can highlight the most important directions of development of the state-private partnership in which the state needs to strengthen its efforts to provide quality services in the conditions of economic instability (Tab. 2).

Table 2: The directions of using of the state-private partnership in conditions of instability

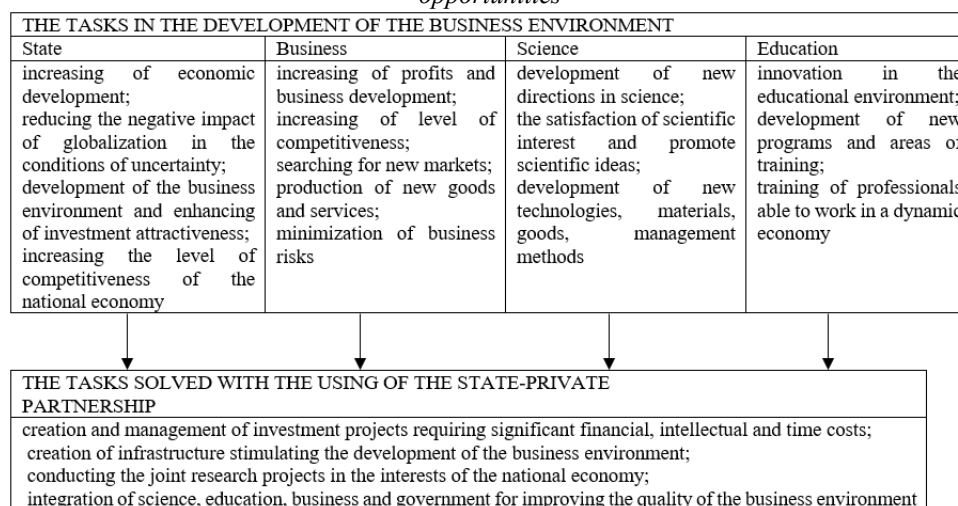
The main problems	Directions to solve
The existing mechanism of state regulation insufficiently corresponds to conditions of instability	Development of a system of priorities in solving problems of overcoming global instability; Preparation of target-oriented development programs; Combination of social and economic factors in the process of state regulation; Defining the limits of government intervention.
Entrepreneurs are not motivated to implement the new behavior models	Ensuring the economic freedom and expanding the sources of investments; Using the mechanism of attracting entrepreneurs to the development and implementation of state programs of economic development.

The development of the state-private partnership should be carried out taking into account own and foreign experience in the following areas:

- improving the regulatory framework promoting the state-private partnership;
- using of new and alternative financial instruments to attract investments due to the sharp reduction in external borrowing;
- state support in the process of realization of the largest and most important infrastructure and business projects;
- cooperation a wide range of stakeholders, including foreign, with different forms of ownership. (Lessons from PFI, 2011)

In our opinion, improving the quality of the business environment should be expanded through the involvement of representatives of science and education under the leadership of the state. Formally the model of this work presented at Fig. 2.

Figure 2: The model of improving the business environment with the using of the state-private partnership opportunities



The priority areas of the state-private partnership are innovative-oriented infrastructure projects, projects in scientific, technological and educational spheres (Ivanova et al., 2017). They provide not only profit for entrepreneurs, but also the improving the qualitative indicators of the Russian economy.

The current global trend shows the reduction of the share of funds allocated from the budget for science, and the increasing the share of private sector in funding of scientific research of applied nature. (Delmon, 2010) The investments in intellectual capital are recognized as the most efficient way of resource allocation. The experience of China, Israel, Finland and other countries confirms the fact that the integrative partnership of scientific institutions and businesses through the generation of ideas, development of technology, improvement of business climate etc. provides a significant effect in economic development. (Treasury, 2012)

The most important condition of successful implementation of structural reforms and involving of private investment in science and technology is an effective state innovation and research policy. (Kolesnikova et al., 2015) This should be done in the following areas:

- development of new and improvement of existing legal framework;
- support of fundamental and applied research;
- development of new techniques and technologies;
- concentration of means of the Federal budget and other sources of financing of priority directions of fundamental and applied research with account of the strategic, economic and social interests of the country.

This activity in Russia can be ensured by creating favorable financial and macroeconomic conditions, based on the priority of formation of legal, informational and educational environments. (Mikhaylov, 2014) The basis for the deployment of innovative activity should be an interaction between the state, science, education, business and society by using different forms of the state-private partnership for solving problems of economic growth and innovative efficiency.

Our generalization of the practice of the state-private partnership in St. Petersburg showed that its distribution remains inadequate. So, the main reasons hampering the widespread using of the state-private partnership include: lack of awareness about the essence and the forms of realization of the state-private partnership, absence of the proper knowledge and experience, as well as imperfection of the legislative base.

The analysis shows that the main barrier for further development of the state-private partnership as essential tool in the framework of functioning business environment is the presence of asymmetric thinking in the state authorities. (Boily et al., 2017) Unfortunate, often the government sees the business as the funding source, not a partner. In Russia, as in all countries, the main role in the partnership of business and state in conditions of instability belongs to the state which should assume the functions of forecasting of business development. This task should be considered as an important on different levels: macro-, meso- and microeconomic. In the context of ensuring of economic security in the process of implementation of the state-private partnership the state cannot be limited to cooperation with private enterprises and entrepreneurs, not taking into account the interests of the national economy as a whole. This approach ensures:

- protection of interests of the various members of the state-private partnership;

- searching the perspective ways of development in those spheres of economic activity, that can feel the most significant effect from the mechanism of the state-private partnership;
- formation of effective system of stimulation of development of the state-private partnership on the level of industry, region and economy of the whole country;
- preparation of proposals for improvement of legislative base;
- monitoring of the results of activity of the state-private partnership.

This allows us to consider the state-private partnership as a control mechanism, providing the impact on the business environment on the base of integration of resources and efforts, as well as finding the mutual interests of state and business in the process of development.

### 3. Conclusion

The possibilities of the state-private partnership allow find the decision of a task of improvement of the business environment. It is especially important in the period of instability and appearance of new risks for the Russian economy. In addition, it should be pointed out that the transition of Russian economy to innovative sustainable type of development also involves the using of the state-private partnership opportunities

Additionally, the state-private partnership assumes an effective interaction of institutions of the state and business in various directions of their activity. In this case, the state must exercise the functions of not only the partner, but also the organizer, coordinator and the customer for such interaction. These conditions contribute to the creation of a sustainable mechanism of reaction to socio-economic challenges of globalization.

The most important condition of success of this work is the implementation an effective innovation and research policy by state. This involves the strengthening of stimulation of development of science and education. Thus, the creation of a quality business environment needs a combination of efforts of the following parties: the state, entrepreneurs, science and education. The using of the state-private partnership accelerates this process and makes it more planned, which is especially important in conditions of global instability.

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# TECHNICAL SOLUTIONS ENABLING MULTI-CHANNEL APPROACH TO INTERNATIONAL LOGISTICS

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**Abstract.** In contemporary world, when conducting any type of business activity, one ought to follow technical development and various tools being offered to maintain, but also to boost the improvement of activities undertaken within business action. Therefore, it seems important to examine and verify contemporary solutions being offered to companies and their stakeholders. Contemporary technical solutions currently in offer present devices based on GPS, RFID, or Internet of things, which prove to be very useful and allow to improve considerably the flow of activities performed within the supply chain, especially in multi-channel approach. Also, available software allows to manage the work and monitor it to the degree one could not have imagined several decades, or even years, ago. Currently, such solutions may be completed with even more flexible tools, easy to use and relatively inexpensive. That is why it seems important to test available solutions of standard range, but also to verify newest tools, the ones that are often based on one device, used by almost everyone, relatively inexpensive and easy to replace: a smartphone. Software prepared to work for logistics via such device appear to be reasonably promising, even if not yet able to fully replace standard solutions. It seems prudent not only to learn about such help, but also it is important to examine how transport branch of economy assesses such solutions and equally important- what development potential may be discovered in this aspects of conducting business activity.

**Keywords:** multi-channel logistics, agility, supply chain

**JEL Classification:** R4, O1, O2, O3

## 1. Introduction

Contemporary challenges one meets when dealing with international logistics may be often answered with the use of appropriate tools and business approach. (Roa et al., 2011) International logistics is w wide term, here relating to transactions concerning moving of goods, services or people (in some cases) among more than one nation. (Roa et al., 2009) In such type of business activity, what could be even called as a „business must have“ is the necessity to choose proper tool from the range currently offered. (Rosenbloom, 2006) Therefore, the need to know and perhaps apply multi-channel approach to performed business activity seems more and more urgent. (Verhoef et al., 2015) Multi-channel approach definition related here is the idea of using, or taking into consideration every of potential routes of paths that may be used by a customer and a business unit to contact and relate with each other. (Wilson et al., 2008)

The development of technical application enabling the use of multichannel approach in international logistics constitutes a great challenge for the business enterprises of the transport,

freight forwarding and logistics sector. Moreover, for the researchers, the notion of multichannel logistics is a complicated issue due to its complexity and the structure of its interaction with the environment, and on the other hand, the matter of important limitations of the research methodology ought to be taken into consideration, especially when disputing the structure and the range of the examined units. (Agatz et al., 2008) Nonetheless, it seems that despite multispectral character of such type of logistics, in international logistics one may examine the applications used in transport, freight forwarding and logistic companies and try to assess development potential described by logistics operators of the chosen countries.

Many of the solutions are based on such technologies, as GPS, RFID, or Internet of things. GPS technology has been used, modified and implemented for years, and so has RFID; GPS, that is Global Positioning System, was developed by American Department of Defense in 1970s (El-Rabbany, 2002), and has been used for both civil and military aims ever since. FRID technology has been created as one of the auto-ID solution, that is the methods to automate the goal to identify a physical object. RFID itself, that is radio frequency identification technology, is a means to identify objects from some distance, with no need to provide the sight of the object. (Want, 2006) The Internet of things is commonly referred to as an idea of connecting physical objects to the Internet thus offering joined services. (Kopetz, 2011) Another definition highlights its use, as it focuses on the integration of a number of technologies using various communicating methods. (Atzori et al., 2010) Yet another reminds a different name of the vision, that is the Internet of Objects, focuses on the fact that this approach enables using not the specialist tools, but everyday objects (Roa et al., 2009), thus making it easy to launch.

In the study there also appeared the difference among a mobile, and a smartphone. A mobile is referred to as a simpler device, providing voice communications, whereas smartphones are considered to be not only communication, but also computer device, central in people's focus. (Lane et al., 2010) The iPad, a device launched in 2010, seems an important tool, as in 2011 it was already adopted by 50% of Fortune 100 companies. (Clevenger, 2011)

The implementation of modern tools and multichannel approach does not seem easy, however, examining it may offer some answers to already stated questions.

### **1.1 Methodology of the research**

Dynamic development of technical solutions enabling multichannel approach in international logistics has currently been one of the key factors shaping new research perspectives within the structure of the business sector of transport, freight forwarding and logistics. Due to the set research aim, there has been made the decision to follow explorative character of the provided examinations. Basing on the chosen target sample, from among 36 business units providing services within transport, freight forwarding and logistics on the markets of Germany, Poland, Slovakia and Czech Republic the Authors have defined technical solutions enabling the use of multichannel approach in international logistics with the use of five following criteria:

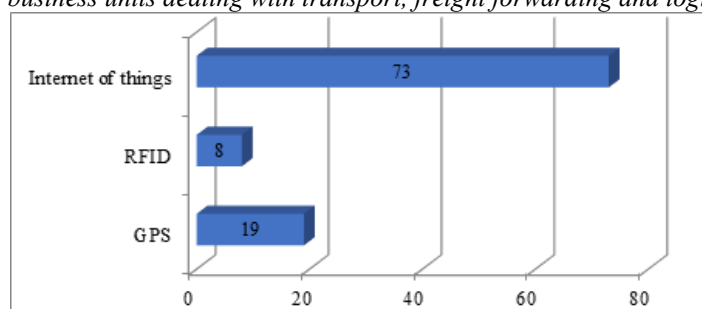
- the structure of technical applications based on GPS, RFID and Internet of things,
- the possibility to integrate the needs of multichannel logistics users with applied IT solutions to provide the flow of goods and information within logistic channels,
- adapting the appropriate software within specific types of multichannel logistics,
- users' assessment on software types, and
- trends and dimensions of multichannel logistics development in international logistics.

Within the research two methods of data collecting were used, that is the questionnaire and the in-depth interview. In order to determine the examined issue, five-grade Likert scale was used, where 1 means minimal appearance of the examined notion and 5 its maximum. The time span of the research covered 4 months, that is from May to August 2017.

## 2. Chosen research results

The chosen results of the research concerning technical applications enabling the use of multichannel logistic approach in the international logistics cover the examination of five studied categories, as well as, within those categories, specific factors and conditions determining their range and the impact. The first of the identified categories is the structure of technical applications based on GPS, RFID and Internet of things. The study focused on determining the intensity of the structure of the used technical applications within the set context. The results imply that the definite majority of the technical applications concerning the information flow within multichannel logistics in international logistics is based on the Internet of things, as so much as 73% of the examined units point to it as the information flow source. Other solutions are much less widely used: GPS based solutions are employed in 19% and RFID based solutions: are used by 8% of survey participants, as presented in Figure 1.

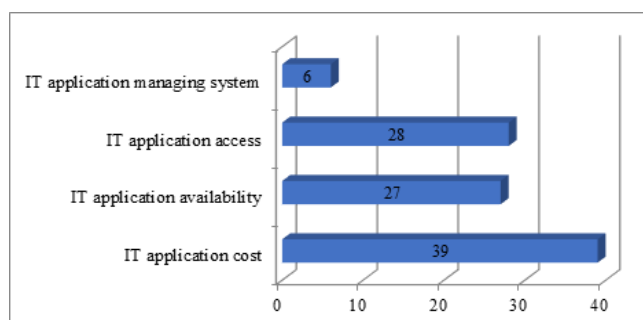
Figure 1: The intensity and structure of multichannel logistic technical applications in international logistics of the business units dealing with transport, freight forwarding and logistics



Source: Own

Within the performed study there has also been identified the factors which influence the structure of multichannel logistics technical applications in the studied group. The results of the examination indicate that vast majority of using the Internet of things and IT applications within multichannel logistics roots from the level of costs incurred by logistics operators (39%), from its easy access (28%) and availability (27%). The value of the managing factor of 6% does not seem to critically *determine* the use of IT applications in multichannel logistics in case of the examined logistics operators – as shown in the Figure 2.

Figure 2: The intensity and structure of the factors shaping technical applications in using Internet of things as a tool for passing information in multichannel logistics from the perspective of logistic operators

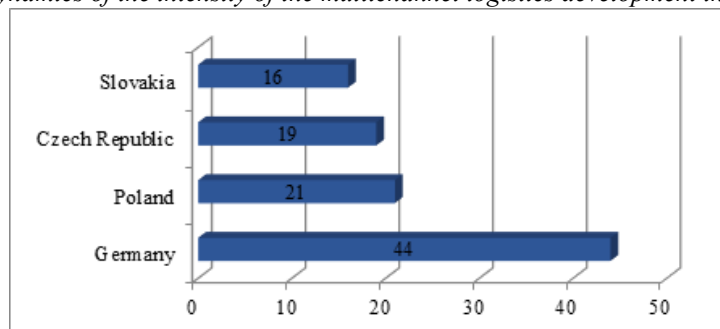


Source: Own



Within the structure criteria of technical applications of multichannel logistics in international logistics within the companies dealing with transport, freight forwarding and logistics there has been examined the intensity of multichannel logistics approach development. The results of the study show that the most advanced development of multichannel logistics takes place in the studied group in Germany: 44%. In other sectors the situation appears more balanced: the aspect constitutes 21% in Poland, 19% in Czech Republic and 16% in Slovakia respectively, as presented in Figure 3.

Figure 3: The dynamics of the intensity of the multichannel logistics development in the chosen areas

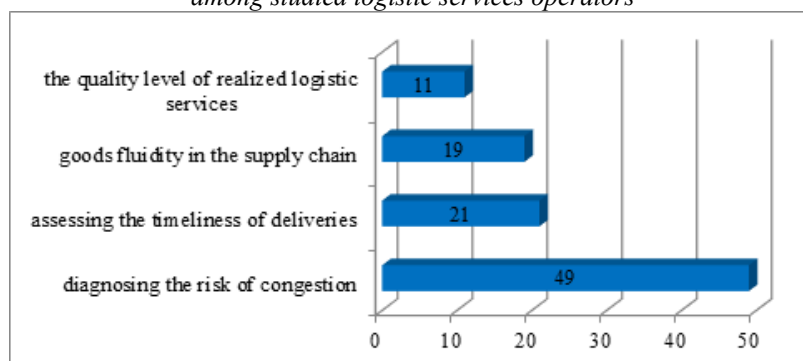


Source: Own

To identify the possibilities to integrate the needs of multichannel logistics users with IT solutions for goods and information flow has become the study area within the next one of the set research criteria. The issue of the potential for integration possibilities is very important, as it determines the structure of needs for specific solutions, joining it with the sector (transport, freight forwarding, logistics) offer in this area. That is why, the Authors have decided to focus on determining real logistic need that would realize the concept of multichannel logistics instead of trying to create a ranking of used IT tools, which flow of changes and the speed of it is so great the ranking would be out of date when the article is published. Thus, the needs for IT applications of multichannel logistics, identified during the research, point to four areas, out of which the dominating one is to diagnose the risk of congestion (49%), to assess the timeliness of deliveries (21%), to identify goods fluidity in the supply chain (19%) and the quality level of realized logistic services (11%) - as shown in the Figure 4.

From the research perspective it is interesting to discover that in the structure of identified IT applications it was the congestion risk that took so high position in the ranking; it may indicate strong motivation of the studied units to seek for the solutions that would limit this old, yet still disrupting challenge the sector faces. It seems worth then to focus on this area in further research.

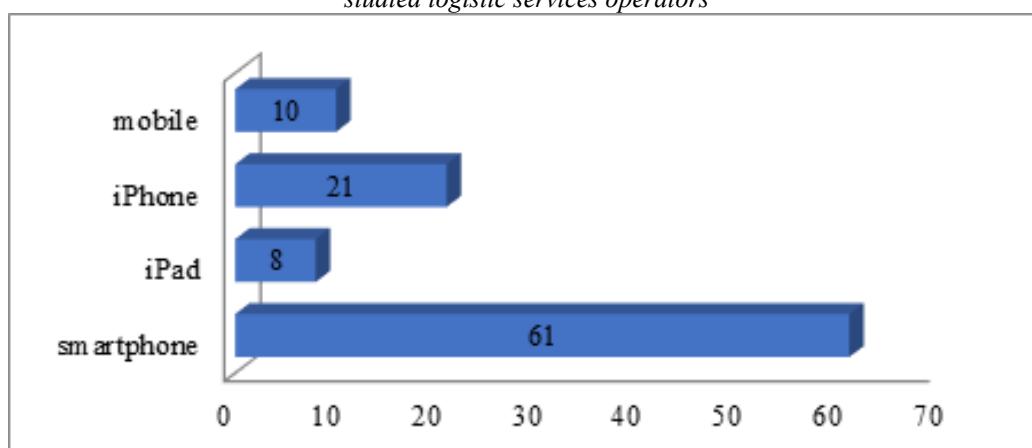
Figure 4: Identification of the structure and the intensity of the need for IT applications in multichannel logistics among studied logistic services operators



Source: Own

The criterium of adapting new software in sercain types of multichannel logistics has become the topic of further study. The Authors have identified four types of channel logistics, that is Single Channel Logistics (SC), Multi-Channel Logistics (MC), Cross Channel (CC), and Omni Channel Logistics (OC). For each of identified types IT tools were selected, which would serve to realize information flow; the average results are presented in Figure 5.

*Figure 5: The structure and the intensity of IT tools used to realize multichannel logistics approach among studied logistic services operators*

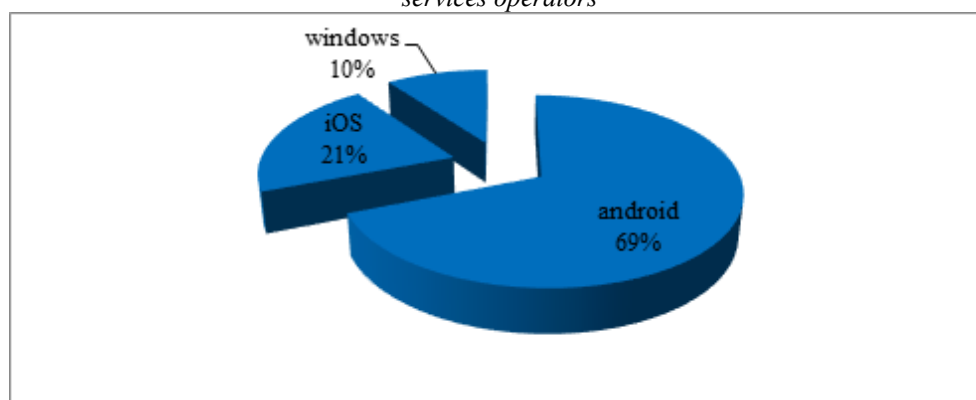


Source: Own

The study results explicitly point to domination of a smartphone (61%), then of an iPhone (21%), then- a mobile is declared (10%) and iPad (8%).

There have also been identified the type of IT applications used in researched sector group as one of the criteria set in the study. The study shows that the most popular solutions work in android (69%), iOS (21%) and Windows (10%) as shown in Figure 6.

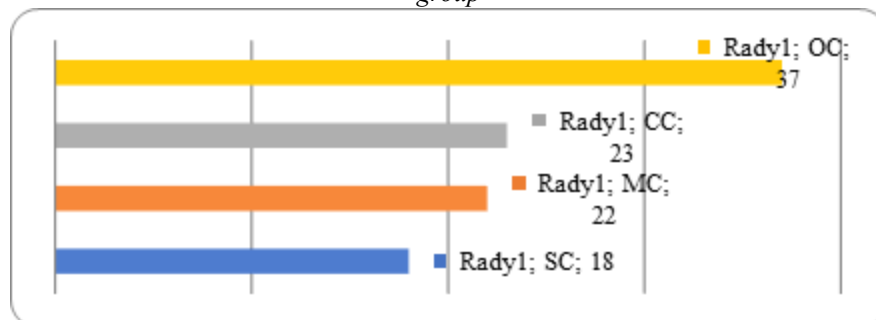
*Figure 6: The structure of IT tools used to realize multichannel logistics approach among studied logistic services operators*



Source: Own

The last of the studied criteria within the technical solutions enabling multichannel approach in international logistics has been to determine the direction and development trends in this field. Having used the classification for types of logistics channels, that is Single Channel Logistics (SC), Multi-Channel Logistics (MC), Cross Channel (CC), Omni Channel Logistics (OC), there has been studied the development intensity of each of them; the results are presented in the Figure 7.

Figure 7: The structure and development intensity of logistic channel approach among studied logistic operators group



Source: Own

It seems that despite the fact that multichannel approach appears to be relative new, or modern, perspective, the study participants opinions are already rather well- grounded. The study should perhaps be continued in order to see what direction the approach will develop.

### 3. Conclusion

The preliminary research that has been conducted only just sketch the picture of new tools used in international logistics or new methods of using already known equipment. Concluding the study results, one may claim that the most commonly chosen tool used to help to conduct the logistic activity is various representation of the Internet of things. One may try to answer further, not yet studied aspect, whether Internet-based solutions (whether based on the Internet of things, EDIs or other means) may not constitute the base for any type of business activity in this economy area? Is such perspective, the one of automatic tool with no human factor, possible?

If yet, budget will definitely be a control line for that. The examination participants pointed to solution availability, but most commonly, to solution costs as to a factor determining the decision to use it. Perhaps financial aspect will be the leading one when considering further engagement in multichannel approach, and will either boost or slow down its progress.

Nonetheless, it seems there is the possibility to follow benchmarking and learn from the logistic providers and organizers from the country most advanced in such approach, that is Germany. Such study perspective seems worth considering.

What appears surprising is the problem area in the research participants approach, when examining their approach to multichannel logistics; it seems that congestion risk is still the greatest problem they face, as they consider changing activity approach to answer this well-known challenge. Also, it is interesting to see that despite the fact there are signs tools such as iPad may answer some of the problems, not only is smartphone the most commonly chosen tool, but also its choice does not appear to be threatened by this rather popular device.

The answers to one of the last study question point to omnichannel rather than multichannel approach as the preferred choice. Perhaps it is due to the fact that whereas multichannel uses a number of channels to contact a client, a partner, or a consumer, omnichannel perspective offers the second party the possibility not only to be up to date, but also to change the offered routes and means of conducting the business activity of their partner. Perhaps such answers to this question suggest readiness of logistic operators to follow the type of activity, where agility is the mostly prized organizer feature? The results of the study are yet but a beginning of research

this field requires; it is hoped they will be continued and therefore will bring answers as to how international logistics will develop.

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# DECOMPOSITION OF THE PROJECT ADJUSTED NET PRESENT VALUE AS A TOOL FOR INVESTMENT DECISION MAKING IN A GLOBAL ENVIRONMENT

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**Abstract.** Under the current global conditions companies have a wide range of investment options. On the other hand, the risk of investing increases due to the uncertainty of future economic conditions. Therefore, it is important to know the significant factors that affect the project value. Traditional financial analysis uses a pyramidal decomposition (also known as DuPont analysis) to analyse the influence of financial indicators. Moreover, the deviation analysis quantifies the influence of changes of independent variable (financial indicators.) on the changes of dependent variable (Return on equity, Return on assets etc.). This method consists of four analyses: the method of gradual changes, the logarithmic method, the functional method and the integral method. Investment projects are traditionally quantified by net present value, but due to the global growth of corporate leverage, the adjusted net present value (ANPV) is used. It takes into account other financial effects, for example tax deductibility of interest (tax shield) and/or cost of financial distress. The aim of the paper is to describe the four methods of deviation analysis mentioned above and to derive a method for determining the factors influencing the ANPV by deviation analysis. A model example of the valuation of two comparable investment projects using an adjusted net present value is presented.

**Keywords:** adjusted net present value, tax shield, decomposition method, pyramidal decomposition

**JEL Classification:** C02, F65, G31, H43

## 1. Introduction

Investing is one of the core business activities. The goal is to select the most cost-effective investment projects with minimal risk. (Jovanović et al., 2016) On the other hand, in the current global environment, it is difficult to achieve this goal; its fulfilment should be a compromise between the expectations of investors and the real conditions. (Gackowski, 2017; Olabisi, 2017)

In the process of analysis, each financial manager should determine which factors affect the value of the project and how the change of them affects the final value of the project. Companies traditionally use pyramidal decomposition (DuPont analysis) to determine significant factors; deviation analysis examines the influence of changes of independent variables on the dependent variable. (Neumayer & De Soysa, 2005; Driffield & Love, 2003)

The most commonly used method for evaluating investment projects is the net present value. Given the global growth of corporate leverage and the growth of leveraged buyouts, the net present value of ANPV is the most appropriate method. (Postelnicu et al., 2015) It takes into account other financial effects, for example tax deductibility of interest (tax shield).

The aim of the paper is to describe the four methods of deviation analysis (the method of gradual changes, the logarithmic method, the functional method and the integral method) and to derive a method for determining the factors influencing adjusted net present value by deviation analysis. The integral method for analysing the influence of the change of determinants on the adjusted net present value is used in the case study of the evaluation of two comparable projects. (Sethi et al., 2003; Ambos, 2005; Shan & Song, 1997)

## 2. Methods

### 2.1 Adjusted net present value

If a financial analyst evaluates leveraged project, basic form of *NPV* (net present value) should be modified. In the case of unlevered project, present value of cash flow is quantified on the basis of equity cash flow (*ECF*) discounted at the cost of capital of unlevered project  $R_U$  (Damodaran, 2002). *NPV* of leveraged project can be quantified in three ways:

1. as *equity cash flow* discounted at *cost of equity of levered project*  $R_E$ ,
2. as *free cash flow (FCF)* discounted at *weighted average cost of capital WACC*,
3. as *NPV* modification called *adjusted net present value (ANPV)*.

*Adjusted net present value* is the most widely used method for leveraged project valuation created by Brealey et al. (2010). Term “*adjusted*” means the sum of value of unlevered company plus the value of side effects of financing to quantify the value of levered company (or project). *ANPV* is based on value additivity method since it splits a project cash flow into pieces to value each piece. (Myers, 1974)

$$APV = NPV + \text{present value of financial side effects} \quad (1)$$

As Luehrman (1997, A) and Luehrman (1997, B) mentioned, for valuing leveraged project *ANPV* (in the case of company valuation also called *adjusted present value – APV*) is divided usually into two parts: *NPV* of unlevered project and value of *tax shield*.

$$ANPV = NPV_U + PV(TS) \quad (2)$$

$$ANPV = \sum_{i=0}^T \frac{ECF_{U_i}}{(1 + R_U)^i} + \sum_{i=1}^T \frac{t \cdot D_{i-1} \cdot R_D}{(1 + R_D)^i} \quad (3)$$

Where *ANPV*- adjusted net present value,  $NPV_U$  - net present value of unlevered project,  $PV(TS)$  - present value of tax shield,  $ECF_{U_i}$ - equity cash flow of unlevered project,  $R_U$ - cost of equity of unlevered project,  $t$ - tax rate,  $D_{i-1}$ - debt at time  $i-1$  and  $R_D$ - cost of debt.

*Tax shield* increases net present value of project due to tax savings arising from tax deductibility of expenses (Arzac & Glosten, 2005). Therefore, it is preferable to finance the project both by equity and debt. Nevertheless, the risk of bankruptcy is increasing simultaneously with the increase of debt. It is appropriate to optimize the debt in order to present

value of the tax shield would be greater than the present value of costs of financial distress and the net present value of the project would grow.

## 2.2 Deviation analysis

Each financial indicator is affected by macroeconomic and microeconomic factors. This set of factors can be represented graphically as pyramidal decomposition or by function of dependent and independent variables. Assume that  $X$  is a dependent variable (basic ratio) and  $a_1, a_2, a_3, \dots, a_n$  ( $n \in N$ ) are independent variables (component ratios). The basic formula for the analyzed function is as follows

$$X = f(a_1, a_2, a_3, \dots, a_n) \quad (4)$$

The purpose of the deviation analysis is to determine the influence of changes of the independent variables on the change of the dependent variable. It is possible to analyze absolute deviation (Eq. 5) or relative deviation (Eq.6).

$$\Delta X = X_1 - X_0 \quad (5)$$

$$\Delta X = \frac{X_1 - X_0}{X_0} \quad (6)$$

This method of analysis depends on the type of relationship between indicators. We know four types of relationships between component ratios: additive, multiplicative, exponential, and combined. (Cisko & Klietnik, 2013) For these relationships there are several methods of deviation analysis: the method of gradual changes, the logarithmic method and the functional method (Zalai, 2013). Dluhosova et al. (2015, A) also mentions the method of decomposition with remain and the integral method.

### 2.2.1 Additive relationship

The additive relationship between component ratios is given as the sum or difference of these ratios. Therefore, the influence of the change of the independent variables on the change of the dependent variable is simply given as

$$X_0 = a_{1,0} + a_{2,0} + a_{3,0} \quad (7)$$

$$X_1 = a_{1,1} + a_{2,1} + a_{3,1} \quad (8)$$

$$\Delta X_{a_1} = a_{1,1} + a_{2,0} + a_{3,0} - (a_{1,0} + a_{2,0} + a_{3,0}) = \Delta a_1 \quad (9)$$

$$\Delta X = \Delta X_{a_1} + \Delta X_{a_2} + \Delta X_{a_3} \quad (10)$$

Where  $X_0, a_{1,0}, a_{2,0}, a_{3,0}$  are initial values of the indicators,  $X_1, a_{1,1}, a_{2,1}, a_{3,1}$  are benchmark values and  $\Delta X_{a_1}, \Delta X_{a_2}, \Delta X_{a_3}$  represent the influence of changes of component ratios on change the basic ratio  $X$ .

### 2.2.2 Multiplicative relationship

The multiplicative relationship between independent variables is characterized by the multiplication or division of these ratios. For this reason, it is not possible to determine the influence of the change of the component indicators on the basic indicator as in Eq. (10)

$$\Delta X \neq \Delta X_{a_1} \Delta X_{a_2} \Delta X_{a_3} \quad (11)$$

Changes of two or more component indicators simultaneously affect the change of the underlying indicator. For this reason, it is not possible to use the assumption according to Eq. (9) but the specific methods mentioned at the beginning of the subchapter are used.

### **The method of gradual changes**

This method assumes the change of only one independent variable and the other variables remain unchanged. Subsequently, the influence of changes of second and another variable is quantified, provided that the previous ratio is changed and the following ratio has not changed, yet according to Eq. (12)

$$\begin{aligned}\Delta X_{a_1} &= \Delta a_1 a_{2,0} a_{3,0} \\ \Delta X_{a_2} &= a_{1,1} \Delta a_2 a_{3,0} \\ \Delta X_{a_3} &= a_{1,1} a_{2,1} \Delta a_3\end{aligned}\tag{12}$$

### **The logarithmic method**

The logarithmic method is based on a simple index number as follows

$$\begin{aligned}I_{a_1} &= \frac{a_{1,1}}{a_{1,0}} \\ I_{a_2} &= \frac{a_{2,1}}{a_{2,0}} \\ I_{a_3} &= \frac{a_{3,1}}{a_{3,0}}\end{aligned}\tag{13}$$

The change of the dependent variable is given as in Eq. (14)

$$\Delta X = X_0 (e^{\ln I_{a_1}} e^{\ln I_{a_2}} e^{\ln I_{a_3}} - 1)\tag{14}$$

From the previous equation, the influence of change of the component factors on the change of the basic factor are given as

$$\begin{aligned}\Delta X_{a_1} &= \Delta X \frac{\ln I_{a_1}}{\ln I_X} \\ \Delta X_{a_2} &= \Delta X \frac{\ln I_{a_2}}{\ln I_X} \\ \Delta X_{a_3} &= \Delta X \frac{\ln I_{a_3}}{\ln I_X}\end{aligned}\tag{15}$$

### **The functional method**

Unlike the logarithmic method, the functional method is based on coefficients of factor changes.

$$\begin{aligned}\Delta X &= (a_{1,0} + \Delta a_1)(a_{2,0} + \Delta a_2)(a_{3,0} + \Delta a_3) - a_{1,0} a_{2,0} a_{3,0} \\ \Delta X &= X_0 \left[ \frac{\Delta a_1}{a_{1,0}} + \frac{\Delta a_2}{a_{2,0}} + \frac{\Delta a_3}{a_{3,0}} + \frac{\Delta a_1 \Delta a_2}{a_{1,0} a_{2,0}} + \frac{\Delta a_1 \Delta a_3}{a_{1,0} a_{3,0}} + \frac{\Delta a_2 \Delta a_3}{a_{2,0} a_{3,0}} + \frac{\Delta a_1 \Delta a_2 \Delta a_3}{a_{1,0} a_{2,0} a_{3,0}} \right]\end{aligned}\tag{16}$$

Substitute  $\frac{\Delta a_1}{a_{1,0}} = A_1$ ,  $\frac{\Delta a_2}{a_{2,0}} = A_2$ ,  $\frac{\Delta a_3}{a_{3,0}} = A_3$ , the effects of changes of the individual component factors are given in Eq. (17)



$$\begin{aligned}\Delta X_{a_1} &= X_0 A_1 \left[ 1 + \frac{A_2 + A_3}{2} + \frac{A_2 A_3}{3} \right] \\ \Delta X_{a_2} &= X_0 A_2 \left[ 1 + \frac{A_1 + A_3}{2} + \frac{A_1 A_3}{3} \right] \\ \Delta X_{a_3} &= X_0 A_3 \left[ 1 + \frac{A_1 + A_2}{2} + \frac{A_1 A_2}{3} \right]\end{aligned}\quad (17)$$

### The integral method

The integral method is used in the deviation analysis of the combined relationships between the component factors. If there are partial derivations of the function (4), the change of the basic ratio is approximated by a linear part of Taylor series expansion.

$$\Delta X \approx \frac{\partial X}{\partial a_1} \Delta a_1 + \frac{\partial X}{\partial a_2} \Delta a_2 + \frac{\partial X}{\partial a_3} \Delta a_3 \quad (18)$$

By decomposition Eq. (18) we can approximate the influence of independent variables. For the exact determination of influences, the coefficient  $k = \Delta X / \Delta X'$  (where  $\Delta X'$  is the sum of the influences of changes of the component makers and  $\Delta X$  is the difference between the benchmark and initial values of basic ratio) is introduced. (Dluhosova et al., 2015, B) The change of the dependent variable due to the influence of change of the independent variables is equal to Eq. (20)

$$\Delta X = k \left[ \frac{\partial X}{\partial a_1} \Delta a_1 + \frac{\partial X}{\partial a_2} \Delta a_2 + \frac{\partial X}{\partial a_3} \Delta a_3 \right] \quad (19)$$

$$\Delta X = k \Delta a_1 a_{2,0} a_{3,0} + k a_{1,0} \Delta a_2 a_{3,0} + k a_{1,0} a_{2,0} \Delta a_3 \quad (20)$$

## 3. Results and discussion

Deviation analysis is traditionally used on pyramidal decomposition of *Return on equity* (*ROE*). In addition, it can be an effective investment control tool when comparing the planned state of the investment with the actual investment status or comparing two different investment projects. Due to the existence of tax deductibility of interest and the influence of the tax shield on the value of the project, adjusted net present value is an appropriate valuation method.

According to Eq. (2) *ANPV* is the sum of the value of the unlevered project and the present value of tax shield. Furthermore, each of the components of the project value is affected by several component factors; the value of the unlevered project by equity cash flow and cost of equity, the present value of tax shield similarly by the value of tax shield in each period and cost of debt. A suitable method of deviation analysis is an integral method because it allows to analyse combined relationships. In the case of *ANPV*, it is also possible to analyse separately the influence of component factors on the value of unlevered project and on the present value of tax shield.

Formulae expressing the influence of the component ratios on the change of basic indicator are given in the following equations

$$\Delta X_{ECF_i} = k \frac{\partial X}{\partial ECF_i} \Delta ECF_i = k [(1 + R_U)^{-i} \Delta ECF_i] \quad (21)$$

$$\Delta X_{R_U} = k \sum_{i=0}^T ECF_i(-i)(1 + R_U)^{-i-1} \Delta R_U \quad (22)$$

$$\Delta X_{TS_i} = k \frac{\partial X}{\partial TS_i} \Delta TS_i = k[(1 + R_D)^{-i} \Delta TS_i] \quad (23)$$

$$\Delta X_{R_D} = k \sum_{i=0}^T TS_i(-i)(1 + R_D)^{-i-1} \Delta R_D \quad (24)$$

The previous equations are the basis for the case study. In post-audit, the company analyses how the actual value of the project has changed relative to the planned *ANPV*. Project period is foreseen four years. Other case study input data is given in Table 1.

Table 1: Input data for case study

ITEM	ECF <sub>0</sub> (EUR)	ECF <sub>1</sub> (EUR)	ECF <sub>2</sub> (EUR)	ECF <sub>3</sub> (EUR)	ECF <sub>4</sub> (EUR)	R <sub>U</sub> (%)	ANPV (EUR)
Planned	-780	575,6	585,2	611,5	824	10,1	
Benchmark	-800	620,9	717	646,4	943,6	12,0	
Difference	20	45,3	131,8	34,9	119,6	1,9	
ITEM	TS <sub>0</sub> (EUR)	TS <sub>1</sub> (EUR)	TS <sub>2</sub> (EUR)	TS <sub>3</sub> (EUR)	TS <sub>4</sub> (EUR)	R <sub>D</sub> (%)	ANPV (EUR)
Planned	0	46,62	34,97	23,31	11,66	7,4	
Benchmark	0	75,43	59,12	37,70	16,55	10,0	
Difference	0	28,81	24,15	14,39	4,89	2,6	

Source: author

As mentioned above, the appropriate method of analysis is the integral method, the task is solved by the equations (21) - (24). The analysis solution is shown in Table 2.

Table 2: Results of deviation analysis

ITEM	ECF <sub>0</sub>	ECF <sub>1</sub>	ECF <sub>2</sub>	ECF <sub>3</sub>	ECF <sub>4</sub>	R <sub>U</sub>	ANPV
Influence (%)	8,08	16,62	43,91	10,56	32,87	-35,58	
Influence (EUR)	12,77	26,27	69,41	16,69	51,96	-56,25	
ITEM	TS <sub>0</sub>	TS <sub>1</sub>	TS <sub>2</sub>	TS <sub>3</sub>	TS <sub>4</sub>	R <sub>D</sub>	
Influence (%)	0	10,83	8,46	4,69	1,49	-1,91	100,00
Influence (EUR)	0	17,13	13,37	7,42	2,35	-3,02	158,09

Source: author

The actual value of the project has increased by 158,09 EUR compared to the projected value. The tax shield positively affects ANPV, however, its influence is not as big as we expected. Growth of ANPV is affected the most significant by the change of equity cash flow, has 43, 91% -share of the change of the value of the project. Both cost of equity and cost of debt negatively affect the growth of ANPV, due to the growth of the discount factor in both cases.

The integral method used in the previous case study has the widest use among all methods of deviation analysis. Other methods have several drawbacks that prevent their use in combined relationships or for nonlinear formulae.

The disadvantage of the method of gradual changes is the dependence of order of factors on the result. On the other hand, it is simple and therefore widely used. Therefore, a necessary condition of the correct use is to maintain a sequence of component ratios for each deviation

analysis. The drawback of the method is eliminated by the method of decomposition with remain. It is similar to the method of gradual changes, but is not affected by the order of component ratios. There is a residual component that represents the simultaneous change of two or more independent variables. Assigning this remains to the appropriate variable is questionable. (Zmeskal & Dluhosova, 2013)

The necessary condition for proper application of the logarithmic method is that all index numbers must be positive. On the contrary, it eliminates the shortcomings of the previous methods. Functional analysis takes into account all combinations of influences of determining factors. However, it is not applicable to combined relationship between factors and the complexity of the calculation increases with an increase in the number of factors.

#### 4. Conclusion

ANPV is one of the most widely used methods of evaluating investment projects. It separately quantifies the impact of the tax shield on the value of the project nad the value of unlevered company (or project). (Kolari & Velez-Pareja, 2013) It also eliminates some problematic aspects of other methods, such as the Circularity problem. (Massari et al., 2008)

Paper was focused on analysis of adjusted net present value based on decomposition and deviation analysis method. Four methods of deviation analysis were presented and their use for the decomposition of ANPV was analyzed. It has been investigated that the integral method is the most usable method; this method is also applicable to the combined relationships between factors as well as to the analysis of nonlinear formulae.

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## FORMATION OF INNOVATION COMPETENCIES IN THE SYSTEM OF GLOBAL EDUCATION

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**Abstract:** The paper presents the authors' vision of the concept of global education and substantiates the need for the formation of innovation competencies. The concept of global education has been studied by foreign and Russian scholars. The essence of methodological approaches is that education moves to a new level - the use of non-traditional teaching methods aimed at revealing individual traits of a personality. A lot of attention in the research is given to formation of innovation competencies. Each educational system - American, European, Asian, Russian - is characterized by its own approach. In American and European systems of education, more attention is paid to the comprehensive development of students; it is they who are supposed to become the drivers of future development. In Asian and Russian models, approaches to the formation of innovation competencies are in the state of development. The authors have shown that the peculiarity of the "global education" model is that, on the one hand, each national economy has a specific character and is oriented to its own way of development. On the other hand, in each presented model of education, transformation takes place under the influence of changes in the world economy. Such contradictions cause and contribute to the formation of a commonality and a unified model of global education with orientation toward the formation of innovation competencies.

**Key words:** global education, innovation competencies, model

**JEL Classification:** I31

### 1. Introduction

Globalization processes which embraced all spheres of the world economy, from the economy to the society, have also affected education. (Arkhipov et al., 2012) Each national economy has its own education system. It should be noted that in the European countries – participants of the Bologna process, the Bologna system divided education into two levels – bachelor's and master's degrees, and introduced a unified system of credits as well as integrated training programs.

The American system is oriented to the neoclassical concept of education which places the student in the center of the learning process. The whole educational process is aimed at the student's independent work when performing laboratory tasks or doing research, etc. In the US, the education system also provides three levels of study awarding bachelor's, master's, and doctoral degrees. Some universities offer the programs to earn a scientific degree of Eng.SC.

D. which is conferred in the field of technical sciences and is considered to be higher than Ph.D. by status. In the United States, there is no distance learning system, which generally has a positive impact on the quality of education. (Neborskiy, 2013)

The Asian model of education is actively developing; its internationalization began in the 1990 s. In the world university rankings, the universities of China and Japan are taking a higher position. There is an increase in the qualitative level of higher education in Singapore, the Republic of Korea, Taiwan, Hong Kong, etc. However, the Asian model has not yet been formed, and European and American education systems are being built into it. The Asian model of education includes the development of such forms as distance learning, double degree programs; universities are engaged in attracting foreign students to scholarship programs. In China, private universities are actively developing.

Education systems in countries with a transitional economy, including Russia, are also in the process of changing their traditional education models to a modernized degree structure. The Soviet system of education, which began its transformation in the 1990s, ceased to exist in the early 2000s when it adopted the Bologna system. It includes the same elements of the Bologna system – the bachelor's and master's degrees; however, it has retained a traditional and newly revived specialist program; obtaining the degree of a candidate of science and a doctor of science remains important. The Russian education system has full-time, correspondence and distance education, network training, double degree and exchange programs. However, when comparing non-governmental universities in Asian and Russian education systems, we have found out that non-governmental universities in Asia are being actively developed while in Russia, on the contrary, they are being reformed. In addition, Russian universities are trying to enter the overall global system winning higher positions in the ratings.

At the present stage, it is possible to speak about the formation of a new model of global education, the concept of which the authors present in this paper.

Above mentioned educational systems have two common features: the first one is related to the integration into a global education system (Healey, 2008) the second one relates to the formation and development of competencies. Moreover, developed countries are more focused on innovation components, while Asian countries and countries with transitional economies are oriented to professional and cultural ones.

## 2. Methods

While considering the approaches revealing the notion of "global education", we found the model of R. Henvey and E. Botkin to be of much interest. Basically, it has the following features: awareness of the heterogeneity of the perception of the world; environmental awareness; understanding other peoples' culture through the prism of the dialogue of cultures; knowledge about the global dynamics of the world civilization development; consciousness of the choice of the path to further development.

In R. Henvey's model, education is the basis designed to help each person enter the world and harmoniously fit into the system of interrelationships at the cultural, social, ecological and other levels of modern life.

E. Botkin's model is based on the need for everyone to switch from unconscious adaptation to the world to active and meaningful socialization and conscious readiness to resolve new, never previously encountered, situations as well as anticipation and prediction of events and their consequences.

Analyzing the formation of global education, the authors refer to the concept of "global education" which appeared in the United States. In 1970, the American Forum for Global Education was founded with the purpose to provide leadership and assistance for the deployment of global education in the United States and beyond. It should be noted that the United States and the United Kingdom have pursued the ideology of "making English the world's language" since the time of colonization of the XVII-XIX centuries. During the Second World War, huge budgetary and private funds were allocated for the spread of the language. This generally confirms the concept of the emergence of globalization of education in developed countries (USA, Great Britain). (Marusenko, 2016)

Later, the ideas of global education were spread at the UNESCO conference "Bridges to the Future" in New York; the goal of the conference was to prepare an individual to solve aggravating problems and to live in a dangerous, dynamic and interconnected world.

It is known that the OECD countries have formed a "road map for the future". Thus, the report "The future of education" global agenda "presents new elements of education until 2035, which include: the development of educational trajectories and the spread of multi-user online resources; investing in talent; inclusion of a personal style of knowledge; formation of a "University for a billion"; development of virtual tutors and mentoring networks. (Lukovics, 2016)

From the point of view of the Russian authors globalization of education is understood as the marketing of education, i.e. investments of large businesses and international financial institutions in standardizing and distributing of training modules for employees in accordance with technical requirements; elimination of basic illiteracy, which is recognized as the main humanitarian means of combating chronic poverty, economic inequality, as well as a way to prevent civil wars. (Kamashev & Kosenko, 2012) It should be noted that the course to integrating business and education in Russia was confirmed in the new state program "Development of Education for the period of 2013-2020" and in the Concept of the Federal Target Program "Development of Education for the period of 2016-2020."

In their previous works (Boyko & Frolova, 2016), the authors explored approaches to the concept of competence and the features of its formation for small innovative firms. It was shown that the term "competence" (Latin *competens* - appropriate) is applied in various contexts. It is used to denote the totality of powers that certain bodies and persons possess or should possess according to laws, normative documents, and charters of powers.

It is important that the term "competence" is also used in education, it is competences that should be formed in the learner as a result of completing a training course, internship, and an educational program. Competencies are clearly spelled out in the Federal State Educational Standard for each area of training / specialist program.

This paper, expanding the field of research, dwells on the formation of innovation competencies. There are different approaches to this concept. For example, the innovation competence of a teacher should be viewed as a set of competences which includes knowledge, skills and experience and which is characterized by a creative focus on qualitative transformation of educational activities to improve its effectiveness with the help of new achievements of theory and advanced practical methods. (Prodolyatchekno, 2016)

In their practical activity, foreign researchers use "Computer-Supported Collaborative Learning method (CSCL)". The essence of the method is that competencies of students are formed in joint group sessions. (Khaled et al., 2014; Alake-Tuenter et al., 2013)

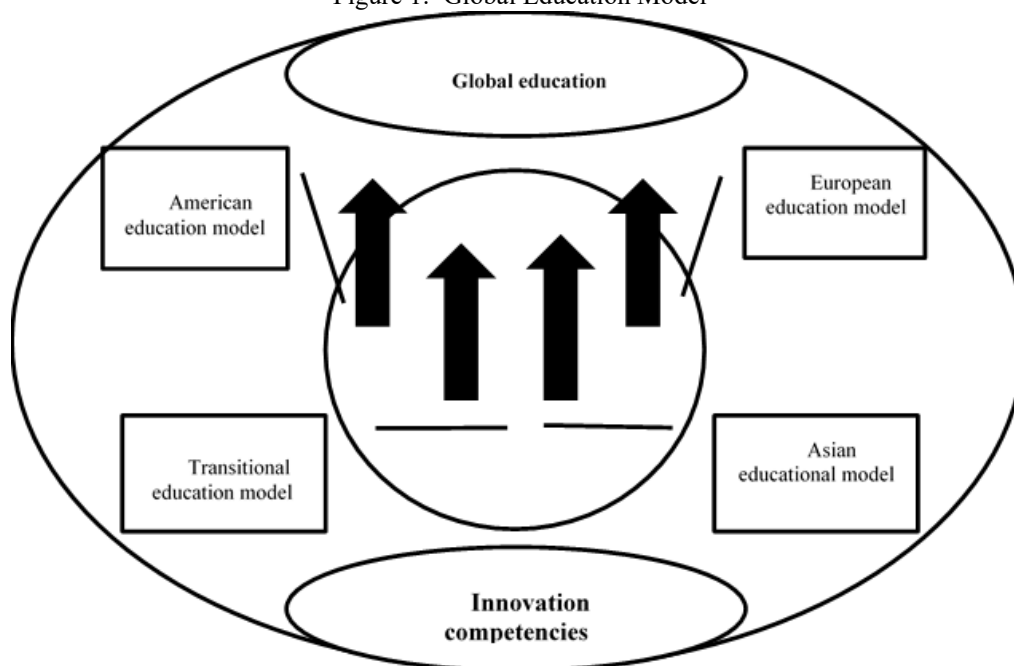
There is an opinion that innovation competencies should be developed by universities together with enterprises considering the specific features of economic activities.

The concept of competence occupies a central position in the curriculum reforms that are currently sweeping across the world. It is said that competence-based education better prepares students to become competent professionals, contributes to students' (professional) identity development, prepares students for participating in contemporary society and prepares students to adapt to changes in work practices within the same occupation. (Billett, 2003; Velde, 1999) Competence is the capacity necessary for effective performance in vocational practice or in a particular academic discipline. (Billett, 2003) Competence-based education adopts a comprehensive, situation-dependent approach that emphasizes the integration of knowledge, skills and attitudes. (Sturing, Harm et al., 2011)

The original Crossan et al. model consists of four processes, which mark different phases associated with the overall, ongoing process of identification and pursuit of opportunities. Jones and Macpherson add that the 4I model should give more prominent consideration to organizations adjacent to the small firm, since opportunities for new products and services often require involvement of an external partner (e.g. a chain or network partner). (Lans, T., Galen at all., 2014)

## 2.1 The concept of the model of global education.

Figure 1: Global Education Model



Source: the figure of the authors

The authors' approach to the definition of global education is that it is a system based on new educational technologies that reveal individual characteristics of a person in a single world space with the needs for the formation of innovation competencies.

The essence of the concept boils down to the following: the leading developed countries are locomotives in the formation of the system of global education; the Asian countries and the countries with transitional economies are at the stage of development.



The most important factors of the education system for the leading countries are formed under the influence of economic macroprocesses such as: the emergence of new industries in national economies associated with innovative technologies, industrial development, which is determined by intellectualization and ecologization, etc. All this will form a demand for new approaches in educational processes, new forms of education, and new educational programs.

Countries with transitional economies and Asian countries are more likely to have a "catch-up" model and which, nevertheless, tend to follow trends in education rebuilding their education systems in accordance with the world standards. It is known that Asian countries, especially the new industrial countries and the countries with transitional economies, are oriented to the development of the industrial sector which should become the foundation for transition to a post-industrial development path and which serves the basis for modernization of the existing models of education. (Zuti & Lukovics, 2014)

It should be noted that the leading states of the world, including Russia, have accepted the idea of the global innovative society as their priority which can be built through the development and integration of three elements of the "knowledge triangle" - education, research and innovation. All this implies large-scale investment in human resources, development of professional skills, scientific research as well as supporting modernization of education systems, so that they are more in line with the needs of the global knowledge economy.

The important point here is that it is necessary to form innovation competencies that are related to new knowledge and technologies that allow solving the problems of innovative development of the economy at the macro and micro levels.

## **2.2 Formation of innovation competences in global education.**

It is interesting to consider how key innovation competencies are formed at the level of each presented model and on a global scale.

Formation of innovation competencies with predetermined key characteristics is one of the most important tasks in the system of global education.

It should be noted that the formation of innovation competencies can be viewed from two sides. The first one is represented by the Alpha model which is the formation of innovation competencies at the level of teaching. The second one is represented by the Beta model which shows the formation of innovation competencies at the level of students.

Investigation of the formation of innovation competencies in American and European education models has shown that all European universities form a "pool of international patents" which is necessary for management of intellectual property, for marketing the university. In universities, financial stimulation of teachers in the form of lump sum payments, financing of research groups and laboratories is carried out.

Beta-model provides orientation of students' training towards technological educational start-ups, which is undoubtedly one of the promising areas. New players are actively trying to take advantage of the training processes; they are more flexible and respond faster to the needs of consumers.

In industrialized countries, economic dynamics is associated with intensification of competition, rapid change of technologies and increased uncertainty, which creates a demand for new types of competencies and new forms of training.

The values and preferences of the societies in industrially developed countries are changing towards the formation of a new individual who does not see any value in education and has no interest in the content of the educational process but is keen on creating a "new meaning" and "his own way." Such a person focuses on individual educational programs that combine the field of study, work, and personal development.

In the Asian model of education, when the national system is created, higher education is assigned the role of mass education. Here, national universities are formed which develop a competence approach.

A similar situation is observed in the Russian model of education, where a competence approach is being formed. Changing the standards of education and shifting to a new Federal State Educational Standard 4 (FSES 4) allows universities to orient the learning process to the formation of practical skills in students, but one cannot say that the new standard provides for the formation of innovation competencies in full. Contemporary system of education forms, on the one hand, a good scientific basis for scientific research; however, only a small part of students is interested in it. The rest of the students have the same attitudes to education as their peers in other parts of the world have - lack of interest in training, orientation toward obtaining a diploma. The incentive system for the faculty is focused more on the publication activity, the attraction of financial resources for R & D, and other indicators of the current system of the efficient labor agreement which was introduced in Russian universities. It has little to do with the creation of innovations and their patenting. It is difficult to change the traditional learning process into an innovative one.

All this, on the one hand, shows that Russian economy is at a transitional stage of development and more attention is paid to the formation of the industrial sector of the economy for which technical experts are needed. Today in Russia, special attention is paid to the training of specialists in technical fields. Practice shows that only large universities manage to develop innovative activities and form innovation competencies. Nowadays it is necessary to ensure that universities and enterprises jointly develop their positions on what specialists to prepare and what competencies will be soon in demand.

Therefore, it is necessary to move to the model of education, which increases the motivation of students for vocational training. It is the model of global education that creates the need to form innovation competencies.

Models of global innovation competencies can be formulated as follows:

- development of non-standard solutions to emerging problems;
- search for the best ways to solve problems through synthesis and reorganization;
- solving creative tasks by using new ideas;
- understanding and using technologies to improve organizational processes;
- independent thinking "out of the field", even if it may contradict the generally accepted opinion;
- identification of useful sources of information, collection and use of only that which is necessary;
- openness to ideas, readiness to listen to the suggestions of others and to try new ideas;
- cooperation with other people to achieve creative solutions;
- comprehensive development - search for information from other spheres of life to find new approaches to emerging situations;
- evaluation of future directions, future ideal model of the organization;
- readiness to oppose traditional methods that hamper productivity.

Innovation competences in global education presuppose the development of an adequate attitude to innovation, to the situation of uncertainty, the ability to respond quickly to changes in existing conditions.

### 3. Conclusion

Based on the above, we can conclude that at the present stage of global education formation there is a demand to form innovation competencies. The demand is caused, on the one hand, by the impact of large macrofactors such as the emergence of new industries, new technologies, intellectualization, and environmentalization of the economy. On the other hand, it is due to the influence of the national educational systems with their own specific features.

We can also state that a global education system is being formed, but not all national economies can be integrated into this process simultaneously as the level of their economic technological, and infrastructural development is different.

However, in the future it will be possible to talk about overcoming the boundaries that prevent an individual from obtaining education that is aimed at revealing characteristics of an individual and using innovative approaches such as group teaching methods, interactive games, etc.

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## EXPORT RATIO AS THE INDICATOR OF GLOBALIZATION FROM THE PERSPECTIVE OF MEASURING TRADE IN VALUE ADDED

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**Abstract.** Modern production organization, involving its fragmentation on a global scale, causes that the value of exported goods consists of both domestic and foreign value added. In consequence, the interpretation of the measures that have been used so far and are based on foreign trade calls for revision and updating. The paper is an attempt to compare the levels of globalization in the economies of the world's three largest exporters: the USA, China and Germany, measured with the export ratio, which, however, was broken down into a domestic and foreign component. The analysis comprised the years 2000-2014. The data from WIOT database were used for estimations. Based on the measure applied, it can be concluded that in the years considered the level of globalization in the economies of the USA and Germany increased. The case of China is different. The level of globalization in the Chinese economy grew in the years 2000-2006, only to fall afterwards. Eventually, in 2014 it recovered to the level achieved in 2000. The most globalized economy of the three under study was the German economy. It was characterized with the highest export ratio and the strongest geographical dispersion of exports (attesting to the strong connection with foreign economies in trade), as well as the highest share of value added content in exports and the highest share of the foreign component in the export ratio/GDP generation (which may be interpreted as the strongest connections with foreign economies in terms of production). The US economy was the least globalized economy. This is revealed in the lowest export ratio, the lowest share of value added content, and the lowest share of the foreign component in GDP generation.

**Keywords:** world export, export ratio, trade in value added, globalization

**JEL Classification:** F100, F120, F140

### 1. Introduction

The export ratio (export in relation to GDP) is one of the traditionally used measures of an economy's globalization with respect to foreign trade. The interpretation amounts to the conclusion that the higher an export ratio is, the more globalized an economy is. Due to the organizational determinants of modern production processes, however, this approach needs to be revised. The fragmentation, i.e. the division of production processes, meaning that particular countries specialize in particular stages of production, which leads to the situation when the goods and services produced comprise both domestic and foreign value added content. In consequence, we should also be able to account for domestic and foreign content in an export ratio. The traditionally defined export ratio can be the measure of globalization in the area of foreign trade, whereas its foreign component should be seen, in this situation, as a measure of

how strong the connection with foreign economies is (the degree of dependency on other countries) in terms of production (as the foreign component is the result of using imported intermediate goods in the process of production).

The article aims to compare globalization based on an export ratio and its domestic and foreign content in the world's three largest economies: the USA, China and Germany. The study uses the data from the World Input-Output Tables (WIOT) in years 2000-2014. (Dietzenbacher et al., 2013)

## **2. Literature review**

The fragmentation of production is a widely discussed topic. (Arndt, 1998; Feenstra, 1998; Hummels et al., 2001; Jones, 2008; Los et al., 2015; Ng, 2010; Johnson & Noguera, 2012, B) The impact of this specific organization of production on foreign trade was addressed in numerous studies. They identified new patterns of trade (Athukorala & Yamashita, 2008), difficulties in determining a country of origin (Maurer, 2011) and the necessity to change the approach to measuring foreign trade not by its gross value, but based on value added. (Isard, 1951; Wei et al., 2014; OECD-WTO, 2012).

Different authors made an attempt to estimate foreign value added in the export of particular countries. In 2012, Johnson & Noguera (2012,A) published the work that presents the calculations conducted by the authors, indicating that the domestic content in export accounted for approx. 73% in 2001. Larger foreign content was identified in the exports of European countries, while slightly smaller – in the exports of the countries in Africa and both Americas. The results of other authors Foster-McGregor & Stehrer (2013), Koopman et al. (2014), Banga (2014) confirmed that the share of domestic content on exported products decreased. This verifies that there are grounds to change the approach to measuring foreign trade and other trade-related indexes by basing them on value added.

Other studies undertook to determine competitive advantage in foreign trade in particular countries, taking into consideration the new determinants and the concept of measuring trade by value added. (Brakman et al., 2015; Brakman & Marrewijk, 2016) Thus, it seems justified to change the approach to commonly used measures and revise their interpretation.

## **3. Gross export and foreign value content in exports in the USA, China and Germany**

In the period under consideration, the world's largest economy was the USA (Tab. 1). Both in 2000 and in 2014, it ranked first by GDP. In 2000, Germany ranked third and China sixth. By 2014, China had moved up to the second position, while Germany had fallen to rank fourth. The USA was also the world's largest exporter. In 2000, its exports exceeded USD 920 billion. Germany was second (USD 585 billion), whereas China ranked eighth (USD 254 billion). the real position of the USA and China (by value added) was the same, but Germany was lower – on the third position. The official statistics show that in 2014 the world's largest exporter was China, the USA was second and Germany – third. The analysis based on value added revealed a slightly different picture. In 2011, the real leader – contrary to official data – was the USA, while China ranked second. (Fronczek, 2016)

In the years 2000-2014 the highest share of the foreign component in the exports was noted for Germany. It rose from 23% to 28%. This trend was also reported in the USA, where the

foreign value added in exports grew from 10.6% to almost 13%. The situation was different for China, where the foreign value added in exports initially rose from 16% in 2000 to almost 23% in 2004-2006, only to fall later and stand at approx. 16% in 2014, similarly to 2000.

Table 1: GDP, gross exports and foreign value content in gross exports of the USA, China and Germany.

Country	2000	2002	2004	2006	2008	2010	2012	2014
GDP (in bn USD)								
China	1 210.8	1 470.3	1 964.8	2 759.8	4 599.6	6 012.4	8 417.7	10 398.7
Germany	1 821.5	1 948.5	2 642.7	2 821.0	3 533.4	3 202.4	3 312.0	3 620.3
USA	10 316.2	11 005.8	12 323.1	13 914.3	14 800.0	15 023.1	16 233.7	17 416.8
Gross export (in bn USD)								
China	254.0	333.1	623.5	1 018.7	1 529.1	1 686.5	2 140.3	2 410.4
Germany	585.6	656.7	966.6	1 184.6	1 597.6	1 385.3	1 547.4	1 682.3
USA	926.5	851.3	998.9	1 262.1	1 579.6	1 552.5	1 832.4	1 927.1
Foreign value content in gross export (in %)								
China	16.1	17.0	22.7	22.6	21.3	19.7	18.1	16.2
Germany	23.0	21.0	22.6	25.7	27.3	27.4	29.1	28.1
USA	10.6	9.3	10.5	12.1	13.2	11.4	13.0	12.9

Source: WIOT, own estimation.

#### 4. Export ratio and its domestic and foreign component

As mentioned in the introduction, due to the organizational determinants of modern production processes, the interpretation of an export ratio as a globalization measure needs to be revised. Thus, the value of domestic and foreign content in an export ratio was estimated. Table 2 presents the results for the USA, China and Germany.

Table 2: Export ratio of the USA, China and Germany.

Export ratio	2000	2002	2004	2006	2008	2010	2012	2014
China								
export ratio (in %), of which:	21.0	22.7	31.7	36.9	33.2	28.1	25.4	23.2
DV comp. (in %)	83.8	82.8	77.3	77.5	78.9	80.0	81.9	83.6
FV comp. (in %)	16.2	17.2	22.7	22.5	21.1	20.0	18.1	16.4
Germany								
export ratio (in %), of which:	32.2	33.7	36.6	42.0	45.2	43.3	46.7	46.5
DV comp. (in %)	77.0	78.9	77.3	74.3	72.8	72.5	70.9	71.8
FV comp. (in %)	23.0	21.1	22.7	25.7	27.2	27.5	29.1	28.2
USA								
export ratio (in %), of which:	9.0	7.7	8.1	9.1	10.7	10.3	11.3	11.1
DV comp. (in %)	88.9	90.9	90.1	87.9	86.9	89.3	86.7	86.5
FV comp. (in %)	11.1	9.1	9.9	12.1	13.1	10.7	13.3	13.5

Export ratio – export/GDP

DV comp. – domestic component

FV comp. – foreign component

Source: WIOT, own estimation.

The highest export ratio was observed for Germany. In 2000 it stood at 32.2%, 77% of which was the domestic component and 23% – the foreign component. In the years 2000-2014, it increased steadily and reached 46.5% in 2014. Simultaneously, the share of its foreign component also grew, amounting to 28-29%. In the period under consideration, China's export ratio was significantly lower than in Germany. From 2000 to 2006 it rose from 21% to almost

37%, to decrease to 23.2% in 2014. The share of the foreign component was also completely different. In 2000, it accounted for 16.2% of the export ratio, while in 2006 it reached 22.5% to fall to 16.4% in 2014. The lowest export ratio was reported for the USA. In 2000, it stood at only 9% (with the foreign component of 11.1%), whereas in the next years, following an initial decrease (below 8% in 2002), it went up to approx. 11% in 2012-2014 (with the foreign component of 13.5%).

Literature proposes a view that the export ratio is higher in smaller countries (due to the limited size of domestic demand producers have to seek market opportunities abroad), but the empirical results of the studies conducted by a number of researchers vary.<sup>1</sup> Due to the fact that the analysis comprised only three countries, the correctness of this proposition cannot be verified here. The calculations conducted for these three countries, however, reveal that the changes in the export ratio were strongly and positively correlated both with the changes in the domestic and foreign component.<sup>2</sup> An increase in the export ratio was accompanied by an increase in the two components, but a change in the domestic component exerted a slightly stronger impact on changes in the export ratio than a change in the foreign component.

## 5. Geographical dispersion of exports in the USA, China and Germany

In the analysis of the dispersion of exports, the level of globalization was measured with the Herfindahl Index (H-Index).<sup>3</sup> Based on the conducted estimations, it can be stated that all of the analyzed countries saw an increase in the geographical dispersion of exports in the years 2000-2014, which indicated growing globalization in trade (Tab. 3). The H-Index shows that in the period considered the highest geographical dispersion of exports was reported in Germany. The USA ranked second and China third. It should be emphasized, however, that China achieved the highest progress in this area. While in 2000 its geographical dispersion of exports was significantly smaller than in the other two countries, it was still evidently lower than in Germany, but comparable to the one in the United States.

Table 3: Dispersion of exports of the USA, China and Germany.

Indicator of dispersion	Exporter	2000	2002	2004	2006	2008	2010	2012	2014
H-Index	China	0.108	0.103	0.091	0.079	0.058	0.062	0.064	0.061
	Germany	0.055	0.051	0.049	0.046	0.043	0.039	0.040	0.039
	USA	0.071	0.069	0.067	0.063	0.054	0.056	0.056	0.059
Number of partners <sup>a</sup>	China	57	57	61	68	74	77	78	78
	Germany	55	60	61	62	65	65	64	65
	USA	53	57	59	63	67	61	58	66

<sup>a</sup> – number of partner countries whose share in the exports exceeds 0.1%

Source: UNCTADstat, UN Service Trade, own estimation.

It is also worthwhile to compare the number of countries that had a recognizable share in the exports (at least 0.1%) of the analyzed countries. The analysis shows that in 2000 the number was similar for all the countries under consideration (53-57), but in 2014 China was an

<sup>1</sup>Compare: (Olson et al., 2014; Measuring, 2005).

<sup>2</sup>The correlation coefficient between changes in the export ratio and changes in the domestic component was: R=0.995 for China, R=0.97 for Germany, and R=0.99 for the USA. The correlation coefficient between changes in the export ratio and changes in the foreign component was: R=0.98 for China, R=0.96 for Germany, and R=0.94 for the USA. All the relationships were statistically significant at p<0.05.

<sup>3</sup>Estimates were made based on the Herfindahl Index and the methodology presented in the OECD manual (Measuring, 2005). Unctad data were used (UNCTADstat, UN Service Trade).



uncontested leader in this category (78 partners), while Germany and the USA had considerably fewer such partners (65-66 countries).

Another interesting list is the list of countries whose share in exports is of greatest significance for the countries considered. The most important export directions for the USA are the largest European and Asian economies. Besides them the important directions of exports are neighboring countries in American continents. Export partners important for Germany are the members of EU, Asian economies and USA. For China the most important partners are other Asian economies, big European countries and USA.<sup>4</sup>

## 6. Conclusion

The inclusion of the concept of measuring trade with value added in this analysis leads to the conclusion that the traditionally used measure of globalization in foreign trade can be partly used to estimate an economy's globalization in the field of production. The growing foreign component in exports in relation to GDP indicates a stronger connection with foreign economies on the part of production (foreign value added content is growing in exported goods and services, which is the result of using more imported intermediary goods in production).

The compilation of the results reveals that, with respect to foreign trade, the most globalized economy is Germany (Tab. 4).

*Table 4: Ranking of the level of globalization in foreign trade in 2000 and 2014.*

Indicator	China		Germany		USA	
	2000	2014	2000	2014	2000	2014
Export ratio	2	2	1	1	3	3
H-Index	3	3	1	1	2	2
Share of foreign value content in gross export	2	2	1	1	3	3
Share of foreign component in export ratio	2	2	1	1	3	3

*Source: Based on data from Tables 1-3.*

This is manifested in the highest export ratio and the strongest geographical dispersion of exports. The least globalized economy with respect to foreign trade is the USA (it has the lowest export ratio and the weakest geographical dispersion of exports). Additionally, the comparison of two other measures – the share of foreign value content in gross export and the share of foreign component in export ratio – reveals that Germany's economy is also the most dependent on imported intermediate goods, while the US economy relies on them the least. It was also determined that, in the years 2000-2014, their economies became more globalized. Interesting results were achieved for China. Taking into consideration three of the discussed dimensions of comparison, the level of globalization ranged between the USA and Germany. The geographical dispersion of exports, on the other hand, placed it in the worst position out of the three countries under consideration. China was, however, very different from the USA and Germany in terms of tendencies. The results revealed an increase in the level of globalization (with respect to both trade and production) from 2000 and 2006, only to be followed by a decrease and a gradual recovery to the level as in 2000.

In conclusion, it can be stated that in the years 2000-2014 the USA and Germany raised their export ratio, became more reliant on imported intermediates and increased the number of countries to which they exported their goods and services. In the case of China, another tendency emerged. Initially, the significance of exports in its economy increased together with

<sup>4</sup>Own estimation based on UNCTAD data (UNCTADstat, UN Service Trade).

its reliance on imported intermediary goods, but after 2006 the reliance became weaker and weaker. The export ratio and the foreign component in exports fell to the level comparable to the one in 2000. Simultaneously, the geographical dispersion of exports was growing despite a fall in the export ratio. In the case of the USA and Germany, this could be the result of the shrinking internal market and the necessity to look for external markets (e.g. due to the economic crisis of 2009). Accordingly, their export ratio increased. The different situation in China might have arisen from higher economic growth rate, the increasing wealth in the population resulting in the growth of the internal market (causing a fall in the export ratio after 2006), and stronger reliance on domestic manufacturers (hence the lower content of the foreign component in exports). This, however, would need to be studied in more detail to be validated.

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## AN ASSESMENT OF SAVING BEHAVIOR OF LITHUANIAN HIGH SCHOOL STUDENTS

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**Abstract.** This article aims to assess the saving behaviour of Lithuanian high school students. The survey questioned their ability to save, saving level, regularity in saving, saving motives, attitude towards saving, saving motivation and confidence in the saving skills of Lithuanian high school students. A total of 440 questionnaires were collected in spring 2017 portraying a representative sample of Lithuanian high school students' population. Results of the survey revealed that the level of saving among Lithuanian high school students is relatively high and similar to the levels of adolescent savings in the other countries. Most of Lithuanian high school students are irregular savers; their overall attitude towards saving is close to neutrality; their motivation to save may be viewed as moderate, despite their acknowledgment of necessity to save. The aggregate data revealed that the vast majority of the surveyed students tend to underestimate their saving behavior habits and skills. Results of this survey are comparable with the results of the other studies in the same age group across different countries and with the results of Lithuania household surveys in other age groups.

**Keywords:** household saving, personal finance, financial education; adolescent saving.

**JEL Classification:** D14, A22

### 1. Introduction

Saving is an important part of personal finance, since it directly affects the financial well-being of an individual, the pursuit of his financial goals, availability of funds for unforeseen expenses and proper standard of living. A person's awareness of having accumulated savings also provides a sense of psychological security. (Fischer & Anong, 2012) Results of the previous studies revealed that economic and psychological saving behaviour patterns depend on demographic characteristics, such as the age. (Yao et al., 2015) Research in different age groups creates challenges to researchers to adopt methodologies for a specific age while maintaining comparability of the results across the groups. Aschby et al. (2011) research showed that if you save during adolescence you are more likely to save in adulthood. Friedline (2015) found out that children over 6 years old are capable to save and start forming their saving behavior. Therefore, it is crucial to better understand the saving attitudes and behaviour of the younger generation that are still easier accessible for financial literacy programs.

This article aims to assess saving behaviour of Lithuanian high school students, specifically questioning their ability to save, saving level, regularity in saving, saving motives, attitude

towards saving, saving motivation and confidence in the saving skills of Lithuanian high school students.

## 2. Theoretical approaches to saving behaviour of young people

There have been a lot of discussions and concern about people not saving enough and having irrational long-term and short-term saving goals. However demographic changes, migration patterns as well as financial globalization trends forced people to take more and more responsibility for their financial welfare in the long run. Also, the short-term under-saving discloses vulnerability of households to possible unexpected changes in their economic or social conditions.

The saving theories of the 20<sup>th</sup> century explain *saving behaviour* not only with economic but also with social and psychological variables, such as beliefs, attitudes, motivation or peers' influence. The absolute income hypothesis (AIH) states that consumption/saving is a stable function of current income while the permanent income hypothesis (PIH) argues that consumption/saving of an individual depends on permanent income rather than current level of income. On the other hand, the Duesenberry's Relative Income Hypothesis concludes that an individual's attitude to consumption and saving is dictated more by his income in relation to others than by abstract standard of living. According to the Life Cycle Theory by F. Modigliani and R. Brumberg, people at working age with higher income consider the fact that they will receive lower income in retirement, and therefore try to save more for the future. This theory assumes that a person strives to maintain a similar level of consumption throughout his life. Another theory of saving is the precautionary saving theory. This theory provides that the level of personal income may change due to unforeseen circumstances, for example, in the case of loss of employment. To avoid a sudden drop in income levels, people choose to save money. Katona's (1975) theory of saving assumes that saving/ consumption is dependent not only on the ability to save/ consume but also on the willingness to save/ consume. (Otto, 2013) Carroll et al. (1992) wrote that the level of saving is increasing for people exposed to poorer future expectations or worries about worse future labor market trends.

There has been a long-standing interest in the financial literacy and financial behavior of children and teenagers. (Aschby et al., 2011; Otto, 2009; 2013; Otto & Webley, 2015; Furnham & Millner, 2017; Jappelli & Padula, 2015 and etc.) All the above discussed theories were developed for the analysis of behaviour in the adulthood, but most of them can be applied or adapted for the saving behaviour in adolescence. A positive association was found between saving during adolescence and saving in the adulthood. (Aschby et al., 2011) Also, the saving behavior of first year students is linked to their well-being in the future. (Serido et al., 2010) More important the need for financial independence is increasing during the years of childhood and adolescence therefore, saving money could be one of the ways through which adolescents begin to manage their economic decisions as well as their increasing needs and wants in a more autonomous way. (Otto & Webley, 2015)

The concept of saving behaviour in micro level is much wider than just the fact whether an individual saves or not measured by the difference between an individual's disposable income and its consumption expenses. Different authors choose different approaches to the definition of saving behaviour. In this article the saving behaviour is understood as a composition of the seven components: ability to save, saving level, regularity in saving, saving motives, attitude towards saving, motivation or willingness to save and subjective saving skills.

**Ability to save.** To be able to save cash inflows are required. In the adulthood the main source of income comes from the person's employment. Children get their first chance to spend or save real money through pocket money, a fixed sum of money given on a set day. (Leiser & Ganin, 1996, Otto, 2013) Most parents start providing children with some pocket money by the age of 6, with the amount of money increasing linearly throughout childhood and adolescence. (Furnham & Milner, 2017) Therefor the perception of saving and certain saving habits should already have been developed by young people in adolescence. (Aschby et al., 2011; Friedman, 2015) Up to age 15, children and adolescents can optimize their expenditure through trying to get more money out of their parents. (Otto & Webley, 2015) For adolescents above the age of 15, saving is the preferred option when it comes to the acquisition of larger sums of money (for more expensive purchases). (Otto, 2013)

**Saving level.** The fact of saving vs not saving is being addressed in most of the research on saving behaviour. The proportion of the savers in research sample depends on the environment where research has been conducted, for ex. Aschby (2011) used data collected for the 1970 British Cohort Study and reported that the majority of 16-year-old respondents (78.5%) said that they did save.

**Regularity in saving.** Fischer and Anong (2012), in their study of the effect of saving habits on saving behavior, relied on G. Katon's distribution of savers according to the regularity of their saving: a) contractual saving, where one makes routine installment payments for an asset like a home mortgage, which is forced or obligatory saving; (b) discretionary saving, where one deliberately saves; and (c) residual saving, where one does not spend all of income and therefore saves by default. The latter research was conducted with the data from the US Survey of Consumer Finances (2009). Almost half of the sample reported saving regularly (46.1%), while about 32% reported saving irregularly and approximately 22% reported that they do not save.

**Saving motives.** The saving motives children and adolescents considered important to them are likely to differ from those relevant to adults. (Devaney et al., 2007; Otto, 2013) It can be assumed that adolescents should not save for retirement, since they still have neither a job nor enough resources for long-term savings. Short-term savings for a particular purchase should be associated with teenagers' savings (Otto, 2013; Furnham, 1999). In some research precautionary saving is also mentioned as one the main motives for saving independently from the age group. (Yao et al., 2015) Approximately 20% of adolescents mention saving for the future without any specifications. (Otto, 2013) It can be linked to young people needs for independence.

**Attitude towards saving.** It has been researched that in general the attitude towards saving is positive across countries (Otto, 2013). In addition, attitudes towards saving are varied by some demographic and socio-economic features. (Klopocka et al., 2014) However, the adolescents who think that saving is difficult have less positive attitudes towards saving in the sense of it being (morally) good. (Otto, 2009)

**Motivation to save.** Viewing pocket money and allowances to be discretionary spending money, young people's saving should mostly depend on their willingness to save. Intention or motivation is an important part of the theory of planned behaviour and is crucial to better understand adolescents' motivation towards saving. Self - determination theory focuses on intrinsic motivation and extrinsic motivation. (Ryan & Deci, 2000) According to Tuvesson & Yu (2011), internal motivation is when a person is taking action, because he is interested in it, it is fun. External motivation is when a person takes action because he knows that this will help to achieve a certain goal. The latter authors believe it can be tested with the application of The Academic Motivation Scale for motivation to save.

**Subjective saving skills.** As far as the perception of a person is concerned about whether he has well established habits of saving, new research suggests that believing in your ability to save efficiently has direct influence on real financial behavior. Aschby et al. (2010) argue that individuals who believe to be in a worse financial position actually save less than those who perceive their financial position as better one. It is supported with the results by Otto (2009) study in the UK with adolescents between 13 and 14. This study tested self-efficacy of children and adolescents and its influence of their saving behaviour. (Otto, 2009)

### 3. An assessment of saving behaviour of Lithuanian high school students

Lack of the evidence on saving behavior of adolescence in Lithuania verified a need for the research in this field. The research was aimed to collect evidence on different aspects of saving behaviour of Lithuanian highschool students.

#### 3.1 Research methods

**Sampling:** General population of this research is Lithuanian highschool students of 11<sup>th</sup> and 12<sup>th</sup> grade (two last years of highschool). The older students were targeted due to the higher possibility of having some habits in saving behaviour. According to the Department of Statistics of Lithuanian Republic, 52698 students were registered in 11<sup>th</sup> and 12<sup>th</sup> grades of high schools in Lithuania for the school year of 2016/2017. In this survey the sample size was determined according to convenience sampling technique. Sample size of 440 questionnaires with the 95 percent confidence level resulted the 4,65 percent margin of error.

**Characteristics of respondents:** 74 percent of respondents were females with the monthly budget of less than 50 euros or between 50-100 euros. 56 percent lived in cities or larger towns of Lithuania.

**Questionnaire.** The quantitative questionnaire research method has been chosen due to limited availability of the existing data. The questionnaire was constructed from the closed-type questions designated to collect information on the different aspects of saving behaviour of Lithuanian highschool students. The structured questions were chosen for this research with limited answers' options by nominal, ordinal, Likert or semantic differential range. The questions and answer options were adapted to the target group of adolescents. This type of questions was prioritized due to their better precision and higher comparability of the results, which is necessary for quantitative analysis. The research questionnaire consisted of 11 questions. Three questions were designed for identification of respondent's characteristics (such as gender, grade, living area and monthly budget) and the remaining 8 questions were targeted at the specific aspects of saving behavior. Questions on saving behaviour can be grouped according to their purpose. There were questions devoted for identification of respondents' subjective saving behavior. This information was necessary to evaluate the self confidence in their saving habits and knowledge. The other part of the questionnaire was devoted for testing the separate aspects of actual saving behaviour, such as do they save or have intentions to save in the future; how big are their actual or planned savings; do they save regularly, what do they save for. The question 10 helped to identify the attitude of Lithuanian high school students towards saving. The last group of questions was devoted for the saving motivation identification of respondents. The structure and content of the questionnaire were based on the earlier research in this field by other researchers (Webley et al., 2015; Fisher, Anong, 2012; Tuveson & Yu, 2011) as well as theoretical insights by the authors.

**Timeline and distribution.** The research data was collected with the help of survey method. The questionnaire was uploaded in a special web site and the link was distributed to the targeted auditorium by e-mail, within targeted social media groups and other channels with the assistance of school administration. The survey was conducted over the period of April 5-23, 2017.

**Eliminations of the research.** It is important to note that there could be a chance of error in sampling as the respondents' structure could not match the projected sample structure and not fully represent the saving behaviour of Lithuanian high school students. The second limitation could be caused by the chosen data collecting method. As the survey method always leaves a possibility to misinterpretation of questions by respondents or not correctly disclosed information.

### 3.2 Research results

According to the questionnaire results the major part of respondents declared that they have saved in the recent year (81%) and 80% of saving respondents are also planning to save in the future. 13% of the non-saving respondents have intentions to begin saving in the near future as well. The results about the **saving level** allow concluding that most of the Lithuanian high school students understand the importance of saving and brings this understanding to practice.

The behavior of adolescents saving in Lithuania can be compared with the data provided by the Bank of Lithuania's Household Survey Survey (2016) that researched the saving habits of older groups of population. Compared to the nearest age group (18-29) researched by the Bank of Lithuania (2016), respondents from highschools save more even by 31% points. The highschool students level of saving exceeds the saving level of all age groups by 33% points. This comparison reveals that there is a high possibility for saving levels in Lithuania to increase in recent years as the adolescents start establishing their saving habits rather early. According to the research of Aschby et al. (2011), the saving in adolescence is one of the major factors for later saving in other life cycle stages of a person. In the international context the saving habits of Lithuanian highschool students looked rather similar to the similar age group respondents in other countries. For example in a British study by Aschby et al. (2011) 79% of 16-year-olds responded positively to the question "Do you save money?".

One more aspect that describes the Lithuanian students' saving behavior is their **regularity in saving**. The part of the questionnaire devoted to regularity in saving data collection is based on Fisher's & Anong's (2012) and Kahno's research methodology. The majority of the respondents (54.5%) chose a statement categorizing them as an irregular saver type, saving on irregular basis the amounts that are left after all the monthly expenses. 14.1% of respondents declared themselves as nonsaving, and 5% of them do not save, do not plan to save and also spend more than their income. These 5% of respondents are likely to face financial problems in the future. Only one fifth of respondents can be assigned the most effective and rational type of savers, when the savings are planned and spent for saving each month regulary. It allows to conclude that even though the respondents declared themselves as saving, most of them do that without any particular plan or regularity. This discloses the need to develop their saving habits and deepen their knowledge and understanding in this field. Comparing these results with Fisher & Anong (2012) research results, 46% of the households surveyed in the US save on a regular basis, 32% save irregularly and the rest of the respondents does not save at all.

The last question, designed to assess respondents' saving habits, divided respondents according to their **saving motives**. Respondents were asked to evaluate four statements about



their purpose of saving in the five-point Likert scale. The most majority of respondents declared saving for the future needs without specifying. Based on the life cycle theory, students should start developing their saving habits gradually and this is illustrated by the questionnaire results. That most of the respondents saved for not defined needs for the future, but there were respondents who declared saving for emergency reserve purpose or expensive purchases (more than 300 Euros). The households from the nearest age group (18-29) researched by the Bank of Lithuania (2016) mostly declared saving on short-term purchases. The main purpose for students was future needs.

Another component of saving behavior in this study was the students' *attitude towards saving*. Respondents were asked to evaluate four statements in five-point Likert scale in order to determine their attitude towards saving. Based on the collected data, it could be concluded that the overall attitude of respondents towards saving is positive, since the average score for all the statements is above the value of 3. Respondents chose the answer "I fully agree" most often with the statements "I would save more if I had more revenue" and "I can reach my goals with the help of saving". This means that respondents would like to save more and realize that saving helps to achieve their financial goals. The opinions of the respondents differed mostly in the responses to the statement "I'd rather spend money now than save for the future." The attitude of Lithuanian students towards saving is positive. Tuveson & Yu (2011) received the same results in their study of the attitudes of Swedish students. The authors, while studying respondents' motivation to save money, found that the motivation for saving of Swedish students was positive, albeit slightly above the neutrality threshold. In the case of Lithuanian students, the motivation to save is near neutral (3 values), but is nevertheless more negative than positive.

Savings behavior in this study also included the aspect of *motivation to save*. The factors that motivate or would motivate respondents to save money are researched by asking the respondents to evaluate the statements in the five-point Likert scale. Respondents' opinions differed more considerably in evaluating these statements than in assessing the attitude towards saving. According to the research data, most respondents were reluctant to agree that additional knowledge about saving would encourage them to save more. However, respondents tend to agree that additional savings knowledge would help to save money more efficiently, as most respondents chose the answer 4 ("more agree"). Most respondents are not motivated by the perception that saving is necessary, perhaps this is a sign of financial literacy gaps, perhaps the students lack the perception that saving is important. Schoolchildren are moderately interested in financial news, so it can not be said that they motivate them to save money.

For evaluation of the self-assessment of the respondents' saving behavior (*subjective saving*) the respondents were asked to evaluate their saving skills and habits in a 7 score scale. The data shows that most respondents tend to estimate their saving ability on average, with the most frequent answers being 4 and 5. Only about 10% rated their savings behavior with the highest score and about 5% with the lowest score. For comparison, in the research by A. M. Otto and P. Webley (2015) research approximately half of the adolescents (48.3%) claimed to be good at saving.

It was also calculated two aggregate ratios for actual savings behavior and subjective savings behavior of the respondents. Both indicators could gain values between 0 and 52. The difference between these estimates (actual saving behavior estimate – subjective saving estimate) resulted in a minimum difference of -33 and a maximum of 38. The average of this ratio is 8.51, as it is a positive number, respondents generally tend to underestimate their saving behavior. It can be

concluded that the vast majority of surveyed students tend to underestimate their saving behavior habits and skills. Only about 6% have accurately assessed their abilities, while about 15% think they are better off than they really are.

## 4. Conclusion

Lithuanian students who participated in the survey have rational saving habits. The level of their saving is much higher than that of Lithuanian households overall and similar to the levels of adolescent savings in the other countries. It promises a higher level of savings in the future, with current students embracing important savings and consumption decisions. The majority of Lithuanian high school students are irregular savers while the level of regular saving among them is slightly lower compared to adolescents in other countries. The reason for this might be the lack of regular income or lower income in general. Their attitude towards saving is close to neutrality and such results are comparable with previous research. Most respondents realize that saving can help to achieve their goals. The motivation to save of students can be evaluated as moderate, even though they realize that saving is necessary. The comparative analysis of subjective and agregare actual saving behaviour revealed that the vast majority of the surveyed Lithuanian high school students tend to underestimate their saving behavior habits and skills. Such underconfidence in the saving habits and skills of Lithuanian adolescents might have negative influence on saving patterns across age groups in the future.

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# GLOBAL CUSTOMER RELATIONSHIP MANAGEMENT AS A TOOL TO INCREASE THE COMPETITIVENESS OF BUSINESSES

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**Abstract.** Increasing the number of global businesses in the markets is one of the consequences of advancing globalization. Under the term global business, we mean businesses that not only supply products around the world but are consciously deployed around the world, they deploy their participations in order to make use of global benefits such as resource-rich places, labor, intellectual activities, locations with a developed market, benefits provided by the countries in the field of taxation, investment protection etc. Global enterprise can realize strengthen market position only through an enhanced competitive advantage over others. This competitive struggle is conditioned by the quality of the offered products, by the price of the provided products and services, as well as by the efficiency of the performed activities. The new global environment will require completely new approaches by managers. It is untenable to continue in maintenance of the used habits. It is necessary to thoroughly analyze and evaluate individual customer segments and create targeted products. One of the ways to achieve this goal is the implementation of a modern CRM system. It is an interactive process designed to create a customer relationship that will be tailored to meet individual needs and at the same time bring profit to the company. The paper focuses on the possibilities of improving business management processes using the CRM concept to increase competitiveness in a global context.

**Keywords:** globalization, CRM concept, global business, competitiveness

**JEL Classification:** F60, D21, M20

## 1. Introduction

In the current environment of increasing global competition, companies are looking for new methods and ways to convince customers about their strengths and encourage customers to buy their products. The basis and essence for enterprise competitiveness is knowledge based on quality information transfers. A competitive advantage in a product-oriented economy was the ability to quickly respond to growth in demand by increasing the scale of production without any significant increase in costs. The goal of business in the new economy is the ability of the company to adapt to the needs of the customer and therefore the quality and quick information about the customer is the decisive factor contributing to its achievement. When restructuring a business, we are not interested in reducing costs or number of workers, but we focus on business processes that create added value for the customer.

Popular areas of the knowledge business are CRM systems - Customer Relationship Management systems that aim to create customer relationships that are beneficial for both parties, businesses and customers as well.

## 2. CRM - Tool to increase the competitiveness of businesses

Customer Relationship Management (CRM) is one of the modern management and marketing disciplines. Although CRM has become widely recognized as an important business approach, there is no universally accepted definition of CRM. (Ling & Yen, 2001; Ngai et al., 2009; Ahani et al., 2017) Burnett understands CRM as a natural continuation of the market segmentation philosophy, enabling the full integration of marketing, sales and service functions in the enterprise with the goal of clear prioritization and efficient use of enterprise resources. (Burnett, 2002) According to Chlebovsky (2006), CRM is an interactive process that aims to achieve an optimal balance between corporate investment and customer satisfaction. The optimal balance is determined by the maximum gain of both sides. A prerequisite for achieving this optimum is to establish long-term customer relationships. CRM marketing strategy, at the center of which stands customers, and which helps businesses to reach, serve and retain the best, i. e. the most profitable customers. CRM enables targeted and meaningful communication with customers, facilitates contact with them. It helps to gather, sort, analyze information, and transform them into meaningful knowledge about customer needs, behaviors and attitudes that are the basis for product creation and offer of value added services. (Soundararajan & Brown, 2016)

The goal of CRM should be to establish a lasting relationship with the customer and the central concept should be value creation. According to Wessling, CRM is a new solution that means a revolution for business in the global economy, similar to sales at the time of the development of industrial production and marketing in the era of saturated markets. Thinking and behavior focused on customer is considered to be the central idea of CRM. He defines Customer Relationship Management as active creation and maintaining long-term customer relationships. It is a comprehensive methodology of creating advantageous and economically beneficial customer relationships with an emphasis on targeted staff qualification, integration and further expansion of existing technologies, and also the right direction of business processes and the exchange of values between the organization and the customer. (Wessling, 2002)

CRM is nothing more than a strategy that needs to generate a new business atmosphere, which provides a real management of relationships with customers. (Soltani & Navimipour, 2016; Schor, 2016)

CRM implementations have often proved problematical. (King & Burgess, 2008; Ioannou, 2011, Sreenivasan et al., 2011) To reduce the risk of CRM failure, its level of identification is used. This is an important and first step in helping the business to find out:

- What is the current level of CRM (see Fig. 1)
- What levels of CRM can potentially be achieved. (Dohnal, 2002)

There is a range of five levels of CRM, where each level has its own distinctive characters, helping the business to assign a specific level. The CRM level determines the basic CRM enterprise innovation option. It can then move to a higher level in one step. (Kopřiva, 2001; Dohnal, 2002)

Table 1: Levels of CRM

Level	Description	Characteristic
<b>chaotic</b>	Contact with the customer is managed at the time of need; previous contacts are not registered.	<ul style="list-style-type: none"> <li>• high back-office costs</li> <li>• impossibility of planning</li> <li>• inflexibility in the offer</li> <li>• each contact is solved by the original process</li> </ul>

<b>segmented</b>	The existence of the process with the customer; customers are divided into segments; individual segments are managed separately.	<ul style="list-style-type: none"> <li>• segment knowledge reduces back-office costs</li> <li>• repeatability of the customer contact process</li> <li>• no distinction of multiple roles of one subject</li> <li>• inconsistent performance of the business to customers</li> <li>• maximizing the acquisition</li> </ul>
<b>centric</b>	The customers are centrally registered; profiles of the customer are maintained.	<ul style="list-style-type: none"> <li>• uniting the performances of business to customers</li> <li>• distinction of multiple roles of one subject</li> <li>• maximizing the length of the customer relationship</li> </ul>
<b>individualized</b>	The customer's individual needs are monitored; each customer has his / her administrator.	<ul style="list-style-type: none"> <li>• high ability to plan production</li> <li>• individualized performance of the business to customers</li> <li>• flexibility in the product offer</li> <li>• maximizing relationship value</li> </ul>
<b>globally individualized</b>	In all localities, the same processes are applied, individualized according to the needs of each customer.	<ul style="list-style-type: none"> <li>• unified and personalized performance of the business to customers in any location</li> </ul>

Source: Dohnal, (2002).

The chaotic level of CRM belongs to an enterprise that has no primary interest in managing customer relationships. The enterprise usually does not deal with extending or maximizing customer relationships. From a process point of view, the enterprise does not have processed processes with customers, and each new relationship is solved originally, spontaneously. The company does not register its contacts or progress of the relationship with the customer. The result of this level is that the company can not plan any future services because it does not know its customers and their needs. An enterprise at this level should focus CRM innovation primarily on supporting acquisition activities, i.e. creating a technological and process environment for recording and using customer information, creating segments, creating processes for a unified customer relationship.

A segmented level of CRM is the level at which an enterprise recognizes the importance of customer relationship management and undertakes basic steps for such customer relationship management. I.e. customer relationship management processes are defined and the enterprise proceeds procedurally to its customers in a coordinated way. The company understands the importance of the need of new customers acquire. It has business processes for this area. Especially because of the acquisition, the enterprise divides its customers into segments. It is possibly to act on each segment in a differentiated way and so maximize the acquisition activity, but on the other hand, each segment requires a different approach, so there is a breakdown and a redundancy of customer information. By crashing and mainly by redundancy it occurs inconsistency information. The consequence of this is non-differentiation of the different roles of customers, for example, the customer is both a client and a supplier of the enterprise. I.e. a completely different department takes care of the customer in terms of its supplier role and is unable to find out how the customer is in the role of the client.

Centric CRM level can solve and generally address the issue of distribution and redundancy of information about the customer, which has a great impact on the company, because everyone in the company, which is in relation to the customer, has the same customer information as other workers. Decision making is supported by current information and knowledge. The result is a unified approach to the customer not only from a process point of view (at a segmented level of CRM), but also from a material point of view, i.e. due to the unity of the recorded information, we can consider the different roles of the customer in relation to one of them. Furthermore, at the centric CRM level, the profiles of each customer are recorded, as well as

the individual process of customer relationships, which allows us not only to acquisition business activities but also extending customer loyalty.

The individualized CRM level monitors the individual needs of individual customers. Each customer has his / her personal manager, consultant, and business defines its behavior depending on the specific needs and characteristics of the customer. So the customer is confident that the business will always approach him as a partner. The individualized CRM level provides the ability to maximize customer relationship value. The company knows its customers very well, is capable of accurate planning, and significantly reduces the cost of back-office operations. The company is flexible in offering its services as it is able to estimate the future needs of its customers.

The globally individualized CRM level is based on the individualized CRM level, which further improves, expands individualized behavior of the company to customers in all locations where the company operates. This level can only be reached when the company or its customers span multiple countries or global regions. Then we can talk about Global Customer Relationship Management. (GCRM)

### **3. CRM in a global context (GCRM)**

Still more companies act in a global market place. (Ramaseshan et al., 2006) So the importance of customer relationship and information management in these companies has become more significant than before. From this reason the CRM's operational scope has gone beyond local and national boundary to become Global CRM. (Kumar et al., 2011)

Global CRM (GCRM) is the strategic application of the processes and practices of CRM by firms operating in multiple countries or by firms serving customers who span multiple countries, which incorporates relevant differences in business practices, competition, regulatory characteristics, country characteristics, and consumer characteristics to CRM strategies to maximize customer value across the global customer portfolio of the firm (Ramaseshan et al., 2006). Taking into account the preferences of companies for the implementation of the global CRM strategy, it should be noted at the outset that these companies should first implement CRM effectively on at least one national market. Because it only achieves those businesses that overcome the core internal barriers identified with organizational weakness (e.g. ability to motivate employees to maintain established service standards) and also overcome the external ones, including the most important ability to directly establish and maintain contact with customers. (Deszczyński, 2008; Popescu, 2016)

Other obstacles can be divided into macro and micro factors. Corporate culture, firm objectives, global and country strategies of the company belong to internal macro factors. External macro factors are government regulations (such as privacy laws), barriers to exchange of goods and services, market size, infrastructure, consumer culture and consumption habits. Among micro factors we can assign targeted marketing activities of the company such as personalized pricing, targeted offers, loyalty programs and personal communications. (Information Resources Management Association, 2015; Rollins & Gabrielson, 2016) Customer Relationship Management experts are skeptical about developing global CRM strategies. Its implementation is always justified when the benefits of data sharing and centralization of processes outweigh the difficulties in building a proper ICT infrastructure and centralization of processes. (Dyche, 2002) The key to decision making should be to analyze the business environment (the potential for globalization of the sector) and to analyze the corporate internal environment (the internal basis of global expansion). The key factors of the

globalization potential of the sector in which the company operates are the most important market factors that can be characterized as a "customer behavior model". On the other hand, the basis for a global expansion based on the CRM strategy is above all the portability rate of such a business model and the extent to which its use enhances its competitive advantage. (Yip & Hult, 2012) In the context of such an analysis, it is necessary to examine buying process; customer mobility; use of the Internet when using a product / service; ability to run CRM remotely and central; the potential for internationalization of change management processes. (Deszczyński, 2014) Ultimately, excluding any obstacles and barriers, GCRM systems can deliver customer value by taking advantage of similarities across nations and also noticing the differences in a way so as to make the CRM program more effective. (Information Resources Management Association, 2015)

#### 4. Conclusion

Globalization and the development of information technologies are two major factors that have changed relations between customers and traders but also between traders. The effort to keep existing customers and meet their expectations is the two most important accelerators of consistent customer focus. The customer orientation requires extensive internal changes to the rules, procedures, processes and competencies. The main goal of the customer orientation - achieving customer satisfaction - has two partial goals. One of these is to ensure the lowest cost of intensive care for the corporate market (intensive care deserves only a profitable customer) and secondly to maximize the use of market potential, increase turnover and, of course, profit. These factors act against each other. Their optimization in relation to maximum turnover and profit is the domain of an efficient CRM system. Increasing number of global businesses in the markets is one of the consequences of advancing globalization. Global enterprise can realize strengthen market position only through an enhanced competitive advantage over others. One of the ways to achieve this goal is the implementation of a modern CRM system. In this case we can talk about global CRM. Its implementation is always justified when the benefits of data sharing and centralization of processes outweigh the difficulties in building a proper ICT infrastructure and centralization of processes.

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# INTELLIGENT TRANSPORT SYSTEMS IN SLOVAK INLAND NAVIGATION

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**Abstract.** Intelligent transport systems, as a tool for the integration of information and communication technologies in the transport infrastructure and transport means, represent innovative solutions towards more effective and safer transportation. Information and telecommunication technologies have always been a significant part of the transport systems in the age of globalisation. Being the most frequent mean for transporting people and goods, road transport has become the sectoral leader in deploying intelligent systems. Inland water transport is a newcomer in the use of intelligent transport systems. Unlike road transport, inland navigation does not use any centre to integrate traffic information from all important subjects. The River Information Services (RIS), currently in use on the Danube River, provides navigational, meteorological and traffic information to individual subjects operating in inland navigation, but this system does not integrate individual entities into one centre. The paper informs about the need for a single inland navigation centre based on an already existing information centre created for road transport. The main purpose of such an intelligent transport centre is to increase safety, increase the efficiency of transport by saving time for transport, also to improve the quality of the environment and to improve the productivity of the company's commercial activity

**Keywords:** intelligent transport system, information, river, Danube, telematics

**JEL Classification:** L91

## 1. Systems in Slovak navigation

In recent years the transport has seen a significant increase. The increase causes the risk in the all transport chain. Globally, there is a need to understand the risks to reduce adverse effects on the environment, health and property of the human being. Tracking and monitoring systems help eliminate risks, improve the safety and efficiency of the transport, help removing emergencies more quickly and restore the infrastructure to the original state. Intelligent tracking and monitoring systems create transparency and make the managing of operations easier. At present, it appeals to the creating and using of progressive technologies in the form of intelligent transport systems (ITS). ITS creates the basic conditions for quality communication and information society, in the terms of transport it opens new possibilities to achieve the desired mobility in the context of sustainable development of society. The systems are also helpful for effective use of the transport network by using information, communication and control technologies. (Kliestik et al., 2014) The main activities of ITS are:

- Planning and system architecture,
- Exchange transport information,

- Emergency management,
- Funding. (Sjoberg et al., 2017)

Intelligent transport systems, interconnected with all modes of transport will ensure the efficient operation of each transport means, clean traffic situation and the elimination of the emergencies and environmental accidents.

### **1.1 River information services**

The growing demand for high quality, cost and time-saving transport services, as well as the provision of electronic information, has become an important success factor for logistics companies. To better equip inland waterway transport with the necessary tools for these needs, tailor-made information and management services – so-called River Information Services (RIS) - have been developed in Europe to assist both freight and passenger shipping on the waterway.

River Information Services increase traffic safety and improve efficiency, reliability and scheduling of transport. The available RIS data form a base of information for the support of traffic and transport related tasks.

Within the project RIS, implemented in all the Danube countries, the focus was on following:

- Tracking and tracing and international data exchange,
- Electronic reporting and international data exchange - the infrastructure of the electronic reporting system can generate and process the information about the voyage, vessel, cargo (e.g. dangerous cargo, hazardous cargo, normal cargo), about persons on board (crew and passengers), including statistics data generation. (Šlesinger, 2010)
- Notices to Skippers – as one of key technologies designed to improve safety and reliability of inland navigation provide information on long-term and short-term obstructions along the fairway, weather information, current and future water levels at the gauges, restrictions caused by ice or floods, regulations and other relevant data. (Fastenbauer et al., 2007) Notices to Skippers provide the facility to issue the following messages in a standardized format:
  - Fairway and traffic related message – information on a fairway or an object, including the warning for safety, announcement relevant for voyage planning and info service,
  - Water level related message – values for predictions of the water level, the least sounded depth, the vertical clearance, the discharge etc.
  - Ice message – information about the actual or predicted ice conditions for a fairway or its section. Information is usually generated by competent person based on local observation and professional assessment. (Schillk & Seemann et al., 2012)

### **Technical concept**

The RIS system consists of a several parts:

- AIS transponders as a part of the installed infrastructure installed on vessels. Transponders periodically generate static and dynamic information about the ship, cargo and voyage. This information is sent in the form of standardised AIS messages to the coastal (shore) segment (ship-shore communication) as well as other nearby vessels (ship-to-ship communication). (Obad et al., 2012) Globally, in Europe approximately 400 vessels have been equipped within several projects. The AIS transponders are being installed on 40 vessels registered in Slovakia on international waterways.

- The shore segment consists out of 4 basis stations and their workstations placed in the buildings of State navigation administration in Bratislava, Gabčíkovo, Komárno and Štúrovo. These stations cover the entire Slovak stretch of the Danube by the AIS signal from river km 1708 to 1880. The RIS centre is established in the State navigation administration in Bratislava.

Nowadays the whole Slovak stretch of the Danube river is covered by the AIS system. Terminals which allow tracking of the vessels are the workstations of State navigation administration.

## 1.2 Automatic identification system

The AIS system collects tactical information about the traffic on the Danube river, which includes information on the current ship's position and movement of the ships. The AIS (Automatic Identification System) as part of the RIS is used to track inland vessels and their runways. Its aim is to increase efficiency and safety in the terms of inland waterway transport. It is also used as a support for accident interventions using the Calamity Abatement Service.

For successful transmission of information, it is necessary for the Danube vessels and banks to be equipped with the necessary facilities (stations). The station consists of:

- Combined receiver and VHF transmitter (combination: 1 transmitter, 2 receivers)
- GNSS position receiver
- Data processor. (Mitchell & Scully, 2014)

The transponder also includes an integrated GPS receiver that determines the exact location of the vessel on the waterway using GPS satellites. The transponder further comprises a transmitter with an antenna intended for transmitting data for land stations, the AIS signals being automatically transmitted at predetermined time intervals. The AIS transponder sends position information to the vessel and at the same time receives position data from other ships. This information is also received coastal stations that send ships additional information necessary for navigation and which cannot be obtained on the ship. (Žarnay et al., 2010) These include, for example, information on current water conditions, rules governing voyage regulation, etc.

The system operates as follows: The basis condition is to equip the vessel with the AIS transponder (which continually provides static and dynamic ship information to the VHF band). Data is received by AIS shore stations, deployed on the Danube section of the Slovak Republic as follows:

*Figure 1: Base shore stations and the AIS signal on the Slovak stretch of Danube*



Source: SlovRIS

From shore stations, the data are transmitted over the data network to the RIS Centre in Bratislava, where it is stored in the database for 30 days. The most common system uses electronic navigation maps to display the traffic situation (via Google Earth). (Chalupka, 2013)

AIS is used for the nautical information exchange in two modes:

- Between the ships,
- Between ship and shore-side facilities

## **2. Intelligent transport systems**

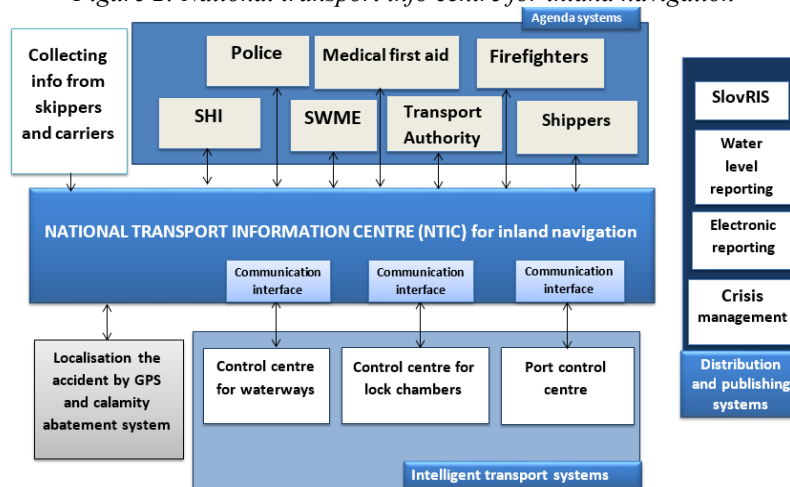
Nowadays, increased demand for transportation means the rise of the number of transport means, which are constantly evolving and adapting to customer requirements. The development of transport means also requires the modernisation of the infrastructure. The current infrastructure (especially in inland navigation) cannot provide the necessary traffic flow. The deployment of infrastructure is usually impossible. (Bariak et al, 2007) Therefore, it is necessary to develop progressive tools to improve the safety and quality of the entire transport system. One of the tools is Intelligent Transport System (ITS). ITS can regulate and manage traffic. For the proper functioning of the system, it is significant to cooperate with all transport departments, urban planners, public and with the information service operators. (Di fazio et al., 2016; Gennadevich et al., 2017) The aim of ITS is to enhance traffic safety, efficiency (by reducing of transport time) and decrease the negative impacts on the environment.

### **2.1 Application of ITS for Slovak inland navigation**

Even though the enforcement of intelligent transport systems is clumsy, it is evident, that in areas where ITS have been established, transport efficiency, safety and environmental quality have increased by up to 30 %. (Buc et al., 2013) At present, the National Traffic Information System, a program designed to support the development of intelligent transport systems has been adopted in the Slovak Republic. The system is oriented towards intelligent transport systems, which are based on information and communication systems and technologies in road transport. The system provides a unified environment for the collection, processing and use of traffic information. In cooperation with the National Traffic Information System, we have developed a model that could be used in the terms of Slovak inland navigation. The system can help improve safety during transport - not only on waterways, but also in ports, during the sailing in the locks; system can also advance the process of exchanging information between the shore authorities and vessel skippers and also can speed up the rescue actions in case of emergencies on waterways (e.g. by linking the system RIS for dispatching firefighters – where for all kinds of dangerous goods could be assigned security procedures in the case of eventual leakage, so the safety and faster interventions will be ensured). Entities of the National transport information centre for inland navigation:

- Police,
- Medical first aid,
- Firefighters,
- Slovak Water-Management Enterprise (SWME),
- Slovak Hydrometeorological Institute (SHI),
- Transport Authority,
- Shippers.

Figure 2: National transport info centre for inland navigation

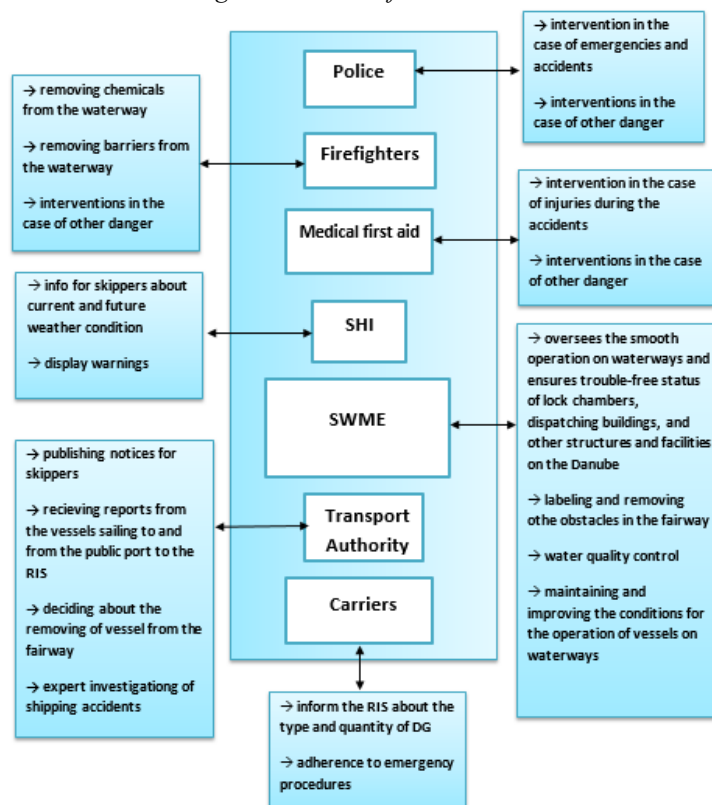


Source: Author

## 2.2 Duties of the entities of NTIS for inland navigation

The following section describes the responsibilities of the entities of NTIS, which are related to the work during the occurring of emergencies on the Danube river. Except the emergencies this also includes malfunctioning of the lock chambers, adverse meteorological conditions that directly affect voyages and need to be eliminated and the shore authorities, skippers and public must be aware of these facts. Defining the responsibilities of system entities helps to improve clarity and efficiency. Information will be obtained through communication channels to those who will be involved in dealing with emergencies on inland waterways.

Figure 3: Duties of NTIC entities



Source: Author

### 3. Conclusion

A strong increase in the use of information and communication technology could be observed in the transport sector – including inland navigation – during the last decades. Onboard PCs with mobile internet connections have already become standard equipment on many vessels operating across Europe, while in the meantime electronic navigational charts and transponders have been developed and introduced. On shore, traffic centres as well as ship reporting systems with interconnected databases are being installed. Each of these technical systems can support several inland navigation services, so-called River Information Services (RIS).

RIS means a concept for harmonised information services to support traffic and transport management in inland navigation. RIS aims at contributing to as safe and efficient process and it aims to utilise the inland waterways to their fullest extent. RIS, as a tracking and controlling tool collects, processes, assesses and disseminates fairway, traffic and transport information. (Jurkovič et al, 2011)

Even though the RIS system is a sophisticated system, there is a lack of harmonisation of system components and interconnection with other modes of transport. The harmonisation and addition of missing parts provide a designed intelligent transport centre for waterway transport.

This multimodal tool has been developed to improve the quality of transport services, transport and shipping safety, reducing negative environmental impacts and increase access to transport information for various transport operators. The reallocation of competences and obligations to the entities of the National Transport Information Centre will guarantee the cooperation, the high quality of the provided services and the speed of intervention of the rescue units in the event of an accident.

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# LOGISTICS PROVIDERS IN THE RUSSIAN MARKET: CONSUMERS' ASSESSMENT IN THE CONTEXT OF GLOBALISATION

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**Abstract.** It is considered that foreign logistics operators provide better service as well as an easier way to settle conflicts. Russian companies are considered more flexible and less formal in terms of contract. However, globalization brings about changes: foreign companies work on the Russian market, and Russian companies adopt foreign experience. The objective of the study is to examine the level of customer satisfaction regarding the work of logistics providers and identify whether customer satisfaction depends on a Russian company or a foreign one and whether there is an impact of globalization on differences in perception of quality of services provided. The study is based on a survey carried out among users of logistics services. The received customer satisfaction index allows you to evaluate the companies to see themselves through the eyes of customers and identify their expectations. Moreover, the analysis allows you to receive the wishes of customers and to identify trends in relation to quality as well as priorities among improvement opportunities. The research will allow potential users of logistics services to make informed decisions, and will make it possible for logistics operators to adjust the selected approaches for addressing the identified "weaknesses" based on the best practices.

**Keywords:** logistics providers, consumers of logistics services, globalization, supply chain

**JEL Classification:** M39, M19, L870.

## 1. Introduction

Globalization makes it possible for companies to benefit from the advantages that are available in different countries. Running business is always country-specific, however, these specifics are becoming less pronounced. This is especially the case of business practices. Legislative regulations are the only condition that could differ drastically and, thus, they are of economic interest for global businesses. For example, countries introduce a beneficial tax regime in order to attract investments (Schanz et al., 2017), Radulescu & Druica (2014). Protectionist measures may also be implemented for certain types of production or activities. (Falk, 2016; Nsibande & Boshoff, 2017)

However, business is entering the global level not only to reduce costs but also to provide better services to customers. An improved customer service also means competitive pricing. Moreover, an improved service equals a satisfied customer. (Garnov & Protsenko, 2012) Customer satisfaction, as Mohtasham et al. (2017) mention in their research, is generated when other consumers have positive experience of service utilization, i.e. "word of mouth (WOM)

has become an important and influential source of information on consumer attitudes and buying behavior”. (Mohtasham et al., 2017) The price for services will also be perceived based on the existing perception of service quality. (Liu & Lee, 2016)

However, consumers have certain conventional perceptions regarding the quality of a product manufactured in a certain country and their assessment of the product often depends on the country of origin. For instance, German cars are seen by consumers as one of the leaders in terms of quality and reliability (Triebe, 2017), while Japanese gadget manufacturers are on top among equipment producers. (Sigiuyama et al., 2011) Perception is also regionally-specific: it is for a reason that countries of origin are protected with trademarks. Only sparkling wine produced in the French province of Champagne may bear the title “Champagne” on its bottle. The territory where cognac can be produced is also strictly defined. An alcoholic beverage manufactured outside of this French region even following the same technology will be called brandy. In Russia, Vologda Oblast which traditionally produces high-quality dairy products is an example of such protected place of origin. Butter bearing “Vologda Butter” on its pack guarantees excellent sales.

The quality of services provided is perceived by consumers the same way. It is generally considered in Russia that services provided by a foreign logistics company are always of high quality and in due time. If a company is Russian, there's no guarantee that the product will be delivered «on time and to the right destination”. However, it's not always the case. Globalization influenced business practices, approaches towards assessment of services by companies as well as the list of services provided by them. In order to be competitive in the global market, companies need to offer a range of services complying with world standards and also provide top-level services. (Skender et al., 2016) That is why today, when the evolution of the globalized mass media and common usage of English as means of communication remove specific features of countries' national and cultural development (Cantle, 2014), business practices also lose their characteristic features.

Thus, the objective of the research is to study the experience of logistics service users and their assessment of services provided to them by logistics companies.

## 2. Methods

In the framework of the research, a survey was held among users of courier delivery services. Customers in one of the Russian big chain sportswear and sport goods stores located in a Moscow shopping mall were asked to answer a questionnaire. The survey was held provided that the respondent was ready to answer questions and confirmed that he/she had previously ordered the delivery of goods from an online store.

The store visitors are mainly middle-aged people with medium income, education above secondary school, living a healthy lifestyle and, as a rule, having a proactive approach to life. The last characteristic in customer profile was the decisive factor in the selection of location for the survey. The research was carried out from June 21, 2017 to July 6, 2017.

The research is focused on the level of customer satisfaction with logistics operators' services. Russian and foreign scholars (Rozanova et al., 2012; Abramova & Protsenko, 2015; Zuniga & Matrinez, 2016) suggest assessing, first of all, reliability, accessibility, flexibility and qualification as parameters of service provision. The meaning of these parameters somehow differs depending on the type of logistics services. In our research we assumed that for courier delivery by logistics operators (their services are being studied in the present paper) reliability

means on time delivery; accessibility – simplicity of making a request and the provision of services during hours that are convenient for the customer (for example, an electronic delivery application form at the website, wide range of delivery intervals including night delivery); flexibility of services suggests non-conventional transportation schemes and routes, acceptance of special cargo and small parcels; qualification means that employees possess specific knowledge and skills, are ready to settle conflicts and are polite.

It is worth noticing that the last assessment criteria – qualification – is vital in our case. The assessment of logistics company's efficiency very often takes place at the final stage – the delivery and physical reception of the order.

A research entitled "Logistics services for online shops: the views and expectations of their customers" carried out in 2015 says that the quality of couriers' communication is the fourth most popular reason (30%, respondents could select several options) for changing logistics operator.

In the same research MaxiPost CEO Aleksey Prygin states that "couriers are no longer just regular postmen, now they are couriers, consultants and drivers all in one". "Couriers are our face for the clients!" – says Denis Turin, CIO at Audiomania, in the same research. His words are corroborated by Aleksandra Brovchuk, CEO at Kinderly.ru: "Personnel in courier companies is the major concern for them as well as for stores as customers associate couriers with a store and not with a courier company". Thus, this is a vicious circle. The store will never conclude a contract with a logistics operator if its couriers are not qualified. (Logistics services for online shops, 2015)

So, the respondents were asked to answer the following questions.

1. Please, assess the level of satisfaction with the quality of services on a 5-point scale.
2. Assess the reliability of the rendered services (on time delivery)
3. Assess the accessibility of the rendered services (simplicity of making a request, delivery during hours that are convenient for you)
4. Assess the flexibility of the rendered services (availability of non-conventional transportation schemes and routes, acceptance of specific cargo and small parcels)
5. Assess qualification of company's employees (whether employees have the required knowledge and skills, are ready to settle conflicts and are polite)
6. Which logistics company do you use?
7. What kind of changes in the operations of the logistics company do you expect?

The first five parameters were assessed based on a 5-point scale. Questions 6 and 7 are open questions.

The quality of services was considered as a comprehensive criterion for the assessment of quality. It demonstrates the general level of customer satisfaction with the delivery. 5 points – excellent, 4 – good, 3 – satisfactory, 2 – bad and 1 – very bad.

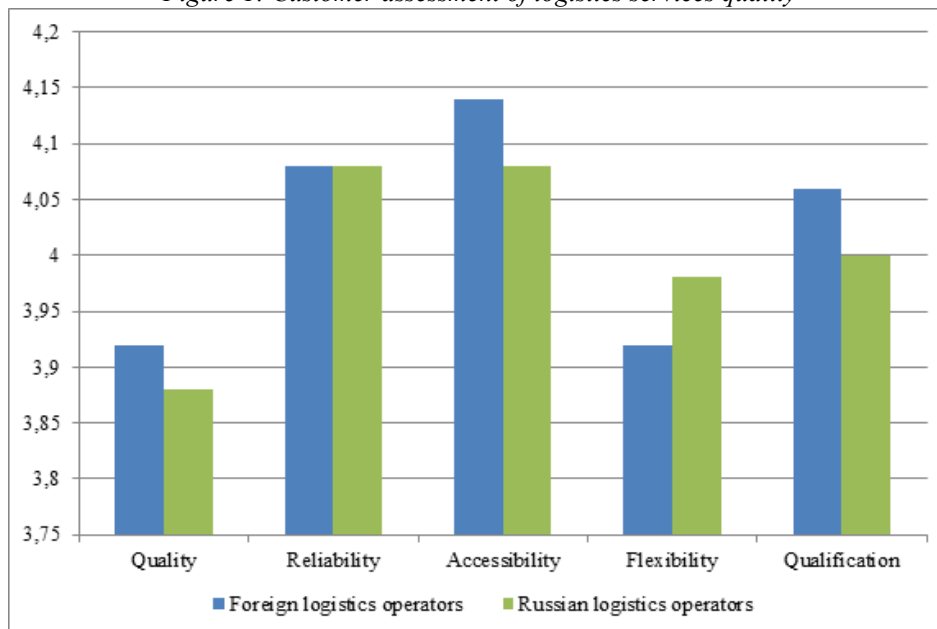
Reliability, accessibility, flexibility and qualification were assessed the following way: 5 – fully satisfied, 4 – partially satisfied, 3 – neither satisfied nor disappointed, 2 – partially dissatisfied, 1 – absolutely dissatisfied.

The total number of answers received – 100.

### 3. Results and discussion

Respondents answered the following way (Fig. 1).

*Figure 1: Customer assessment of logistics services quality*



*Source: authors*

Under the quality criterion, Russian logistics operators received the average grade of 3,88 points while foreign logistics operators have 3,92 points. Reliability points equaled 4,08 for both Russian and foreign countries. Accessibility is 0,06 points higher among foreign companies and flexibility, as the research hypothesis has assumed, is 0,06 points higher among Russian operators. Foreign companies have more qualified personnel which also proves the original hypothesis.

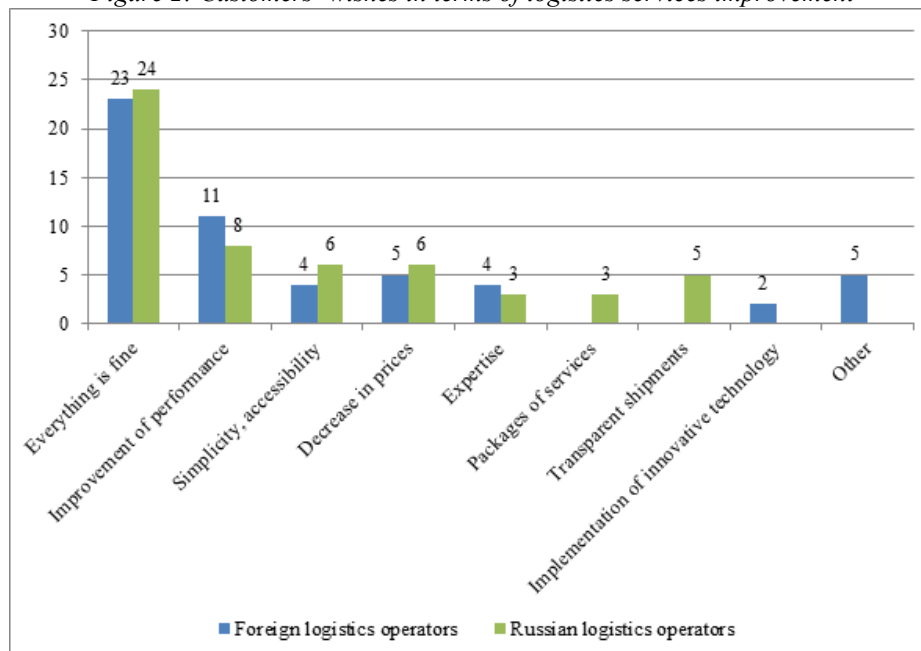
However, the difference in average grades of the four parameters used to assess Russian and foreign logistics operators (reliability, accessibility, flexibility, qualification) is only 0,025 points. The difference in integral quality parameter is higher and amounts to 0,04 points. To our mind, it is explained by the fact that when assessing the quality of services, consumers originally treat foreign logistics operators better than their Russian counterparts. However, when it comes down to a more detailed assessment using certain parameters, the difference in evaluation is almost untraceable.

Globalization and competition among logistics operators in the global market allowed levelling the reliability of services. Indeed, if a company fails to provide on time delivery, it becomes noncompetitive at once. In our opinion, Russian logistics operators slightly lag behind their foreign competitors in terms of “accessibility” criterion as most of them still have smaller scale operations, fewer employees and it’s hard for them to maintain competitive prices providing 24/7 delivery and support desk. Nevertheless, while compensating for insufficient accessibility, Russian logistics operators are more flexible. At the same time, in terms of qualification, foreign companies are ahead again. It is connected, first of all, with the policy of personnel recruitment, training and motivation.

The questionnaire featured an open question: “What kind of changes in the operations of the logistics company do you expect?” Answers to this question demonstrate what customers

dislike about logistics services and what kind of improvements they expect. Respondents were invited to express limitless number of wishes. Survey results are presented in Fig.2.

Figure 2: Customers' wishes in terms of logistics services improvement



Source: authors

So, almost half of the respondents were fully satisfied with services and said that “everything was fine” (23 respondents using foreign operators and 24 respondents using Russian operators). Improvement of performance was mentioned by 11 respondents using foreign operators and 8 respondents using Russian operators. Simplicity and accessibility (4 – foreign logistics operators and 6 – Russian operators) were also among wishes as well as price reduction that was mentioned by 5 and 6 respondents respectively.

It is worth noticing that these results coincide with the results of the research carried out by the authors in April, 2017. The research analyzed the criteria utilized by small businesses to select logistics services providers. Research findings are presented in the paper [5]. Thus, small businesses representatives indicated “simplified paper work” as a criterion for the selection of logistics operators apart from “speed of product delivery”, “benefits for small businesses”, “cost of services” and “safety of cargo” (Kireeva et al., 2017). Speed in modern economy plays a crucial role, which includes the speed of ordering. Competitive advantage may be achieved by offering a simple and easy service. This wish was also reflected in the research. Five respondents using the services of Russian logistics operators mentioned “transparent shipments”. There were no similar wishes regarding foreign companies which suggests that foreign companies manage to simplify the ordering process and track shipments more effectively, thus, making them “transparent”. Users of Russian logistics operators also spoke about packaged services and users of foreign companies mentioned the implementation of innovative technology.

## 4. Conclusion

The research that was carried out demonstrated that globalization, indeed, removes national features of business practices and brings services to a single standard. It is proven by the fact that service users give almost the same assessments to all the companies whether they are

Russian or foreign. Russian logistics operators received 3,88 points in terms of quality while foreign companies were given 3,92 points. If users assess not general impression of a service (“quality”) but rather its components (“reliability”, “accessibility”, “flexibility”, “qualification”), then Russian logistics operators received, all in all, 4,035 points and foreign companies – 4,05 points. At the same time, Russian operators are more flexible than their foreign counterparts.

When evaluating possible performance improvements, half of the users say they are fully satisfied with everything. The other half of the respondents using both Russian and foreign service providers expected performance improvement, simplicity, accessibility, price reduction and expertise. There were certain wishes regarding Russian companies: packaged services and transparent shipments; and also certain wishes regarding foreign companies: introduction of innovative technology, clarity and discipline for everyone. This feedback, to our mind, characterizes customer expectations. Russian operators may be recommended to expand product line while foreign companies are advised to surprise their clients with new technology.

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## CLUSTER COOPERATION IN GLOBALISED WORLD

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**Abstract.** Two seemingly contradictory tendencies: the economic globalisation and industry localisation, have captured the interest of academic community, economists and governments. While the tendency of economic globalisation might appear to reduce the importance of distinctiveness, a tendency of industry localisation seems to do exactly the opposite. Current tendencies of globalisation and localisation have created challenges for policy of national and local governments. A dramatic proliferation of policies based on cluster cooperation is one response to these challenges. The process of globalisation creates higher demand on the adoption of highly flexible innovative solutions. However, in many cases are SMEs not capable of their performing. Research among young entrepreneurs has proved that one out of four entrepreneurs is starting business without previous experience and approximately one third of all do not even know how to reach out to a customer. Strategic alliance of enterprises called network business and clusters have become very attractive. The globalisation and technological development bring a specific form of network business – virtual organisation. Simplifying communication channels has facilitated marketing, sales promotion and advertising through the Internet. SMEs are attracted by advantages of e-commerce and e-business such as the scope and possibilities of trading on the global market, reducing of administration costs, wider price ranges etc. Based on the localisation coefficient calculation, the analysis of current state of cluster initiatives in Spain and abroad the authors propose a potential tourism cluster for Murcia.

**Keywords:** network, cluster, cluster cooperation, globalisation, Murcia

**JEL Classification:** C38, P13, L14

### 1. Introduction

Start-up businesses have currently several opportunities to market entry. The process of globalisation and internationalisation is opening doors for many entrepreneurs in practically any marketplace meeting certain requirements. Small and medium-sized business, on contrary with large multinational companies, must keep pace with this era, react immediately to changes and overtake their competitors in order to survive in the highly competitive environment. (Loucanova et al., 2015) As a result, the concept of joint venture is at the forefront. (Butek & Štofková, 2016)

The concept is based on the mutual cooperation of businesses which can represent a various degree of interconnection. Joint venture includes three basic forms: joint trade, networking and capital links between businesses. (Bucek & Kovarnik, 2007)



**Networking** also called Strategic Business Alliance is based on decentralisation of decision-making power and operates on the basis of continuous information exchange. (Janasova et al., 2017) The main advantage that network business provides is increasing competitiveness through several features: lowering production costs and transaction costs, risk sharing among network members, access to new markets, adaptability to rapid technological changes and international trade or the exploitation of the advantages of other businesses in creating joint information databases. (Parobek et al., 2016) Such networks within the European Union may have a regional nature. In regional networks we observe informal relationships and links to specific features of the region. (Kramarova, 2016)

Cluster initiatives constitute another special form of the concept of joint ventures. (Madudova & Kolarovszki, 2016). There are several definitions of cluster but the best known is the definition formulated by M. E. Porter in 1990: *“Cluster are geographic concentration of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition.”* (Newbiggin, 2014)

Clusters are defined as: *“groups of independent companies and associated institutions that cooperate and compete with each other. They are geographically concentrated in one or more regions, but may also have a global scope. They specialise in a particular field and are linked by joint technologies and experience, represent a traditional industry or are based on a scientific basis. They can be institutionalised (they have manager).”* (Daneshjo et al., 2016)

Roelandt and Hertog state that clusters are: *“production networks of interdependent companies (including special subcontractors) interconnected within the production chain creating the added value. In some cases, clusters also include strategic alliances with universities, research institutes, knowledge services for businesses, intermediary organisations (consultants) and customers.”* (Kuah, 2002)

According to UNIDO (2001) are clusters: *“sectoral and geographical concentrations of enterprises that produce and sell a range of related or complementary products and face challenges and priorities together.”* (UNIDO, 2013)

Cluster members are essentially mutual competitors but mutual co-operation helps them to achieve greater economic performance. (Zauskova, 2010) However, the success of the clusters is not just a matter of creating cooperation between companies as it might seem at the first glance. (Chlebkova, 2016) Through the cluster creation is also created a critical mass of skills which in turn implies the need for a critical mass of people who share ideas. (Juskova, 2009) In addition to working in related industries they can socialise, shift tasks, or even set up their own businesses. As soon as they show prosperity it will reflect on the growth of the cluster itself. (Havko et al., 2016)

In practice, we encounter the cluster division into technology (industrial) and tourism clusters. (Stofko et al, 2015) Tourism clusters are increasingly gaining in importance in the regions development. It is caused by natural specifics that determine the region activity in terms of tourism. (Soltes & Stofkova, 2016) In addition to making the region more attractive an appropriate combination of services and products within the tourism alliance will also increase economic growth due to their flexibility, resource development, innovation or knowledge sharing among members of clusters as well as within the region. (Kovacikova & Stofkova, 2016)

Tourism in Spain is an important element of country development and significantly influences foreign exchange, employment, profits etc. 75.3 million tourists visited Spain in

2016 (year-on-year increase by 9.9%). (BBVA, 2017) Thus, the country earned in this sector about 77,000 million i.e. 8% more than previous year. Average expenditures of a tourist were €1,023 (increase by 3.75% compared to 2015). Overall, we can conclude that the tourism sector is showing positive tendencies. National tourism also contributes to economic equilibrium on the basis of reallocation of income. Subjects in the tourism sector are aware of the importance of both foreign and domestic tourists and are aware of the untapped potential especially in the implementation of new technologies. (Fernández, 2017)

## 2. Methods of the suitable sector identification for cluster creation

Qualitative, quantitative and combined methods are used to identify the sector with cluster's potential. (Zauskova, 2010) The authors used the Location Quotient (LQ) to identify the key regions suitable for the cluster creation using the following formula:

$$LQ = \frac{x_i / X}{y_i / Y} \quad (1)$$

where:

- LQ – Location Quotient for employment in the region,
- $x_i$  – the number of employees working in the sector in the region,
- X – total number of employees in the region,
- $y_i$  – number of employees working in the sector in the state,
- Y – total number of employees in the state.

Region with LQ higher than 1 represent the potential for cluster formation. (Furkova, 2016)

We considered 17 autonomous Spanish regions as regions with potential for cluster creation. The regions: the Canary Islands, Andalusia, Catalonia, the Balearic Islands and the Valencian Community were excluded because according the secondary analysis results, these regions already have tourism clusters. Areas of Galicia, Extremadura and Madrid (Madrid Network) were also excluded for the same reason and due to the complexity of obtaining the data necessary for calculations. In the autonomous region of Aragon are smaller clusters focused e.g. on gastronomy but there is no tourism cluster that would cover all elements belonging to the tourism sector and Aragon was therefore taken into account during our analysis. During the LQ calculation we used data of remaining 9 autonomous regions of Spain showing potential for a new cluster creation.

## 3. Results

The database of employees of whole Spain and for each region separately (2016) was used for the LQ calculation and the key regions identification. The number of employees and the LQ result for each region is expressed by the following table. (Tab. 1)

Table 1: The number of employees and the LQ result for regions of Spain

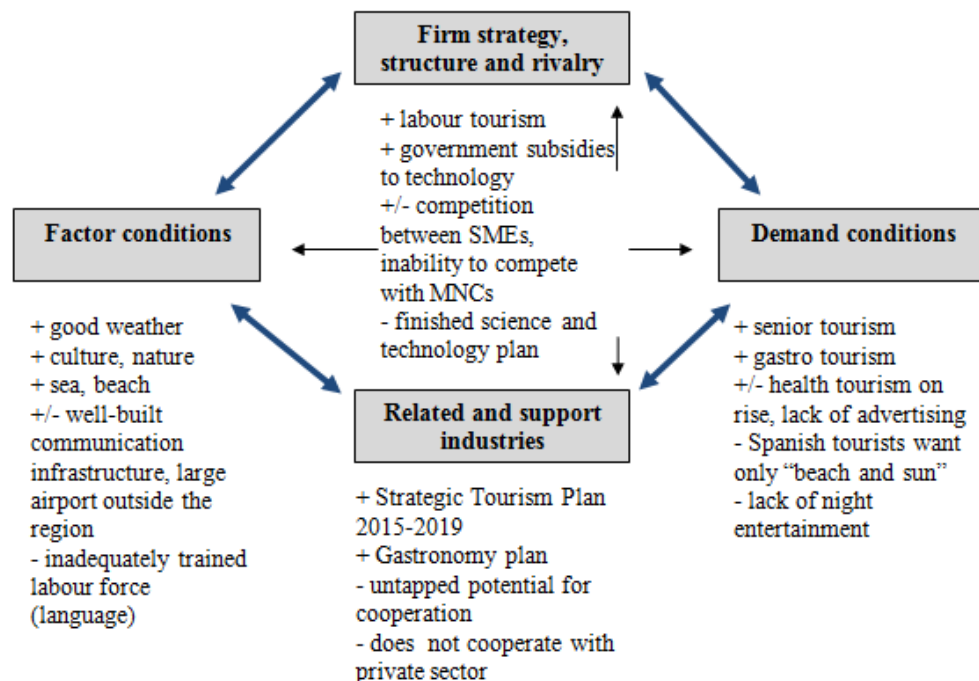
Autonomous region	Total number of employees in the region (X)	Number of employees working in the tourism sector ( $x_i$ )	Location Quotient LQ
Asturias	442,800	50,400	0.836
Basque	975,400	90,200	0.679
Navarre	283,900	17,000	0.440
Cantabria	256,400	14,000	0.401
Castile and León	1,053,300	84,200	0.587
La Rioja	144,500	4,300	0.218

<b>Murcia</b>	600,000	82,500	<b>1.009</b>
<b>Castilla - La Mancha</b>	821,600	35,000	<b>0.313</b>
<b>Aragon</b>	601,000	49,100	<b>0.600</b>
<b>Sum</b>	<b>5,178,900</b>	<b>426,700</b>	<b>-</b>

Source: Own elaboration based on Instituto de Estudios Turísticos, (2016).

Murcia is a region that has the potential for creation of a new tourist cluster, based on our calculation. This region as the only one among the considered regions has the LQ higher than 1. It means that tourism employs more labour force within the region than at the national level. Applying Porter's Diamond will detail the key factors that will interest us in term of competitiveness.

Figure 1: Porter's Diamond of the Murcia region



Source: Own elaboration based on BBVA, (2017).

Murcia have several competitive advantages but on the other hand also faces several problems, as shows Fig. 1. The increase of quality of the "sun and beach" offer and the attraction of tourists with higher value and decision to spend more in other segments outside the hotel are a principal element of our strategy. The services packages could help to achieve this goal. Current **factor conditions** lack investment in quality education. As a partial solution of lower productivity should the Murcia government invest in training programs in specialised skills (e.g. sommelier, water sport instructors) and in language skills. This training programs would be developed in cooperation with cluster members. In **demand conditions** we can see limited access to high-growth markets such as Russia and China. Improved positioning of premium market segments (e.g. luxury hotels with golf and other activities) could help to reverse this situation. The regional government, in conjunction with the involved institutions, should pay more attention to marketing strategies that should create marketing-advertising units in the cluster through a high-quality offer around the principal element "sun and beach". Murcia should educate direct sectors as well as financial support institutions on the importance of vertical and horizontal integration to increase competitiveness, within the context of **firm strategy, structure and rivalry**. The government should also focus on the creation of joint services for SMEs, such as joint e-commerce platforms or booking holiday (higher efficiency).

Simplifying tourism regulation and reducing bureaucracy would help to increase transparency and speed up all processes. Operators of tourism should use the resources and related industries offering the creation of an integrated tourism plan, in terms of **related and support industries**. It represents e.g. interconnection of the components of the food industry and their incorporation into an attractive offer for tourists – a tour of vineyards connected with regional wines tasting, visit of factories producing traditional meat dishes, demonstration of olive oil production, etc. Demand for sport activities would lead to golf tournaments, contests in beach volleyball or water sports exhibitions.

To achieve success of a potential cluster we suggest members from the following areas: gastronomy, transport, accommodation, marketing and PR, entertainment, culture, recreation and business. In particular, they represent suppliers of food, domestic producers, wine bars, restaurants, bars, transport companies, realtors, accommodation providers, travel agencies, marketing and advertising companies, nightclubs, discos, tourist agencies, guides, organisers, excursions, spa, golf, mountain tourism, bank services, souvenir and local products sellers. An important element of the proposed cluster are: the local government and its institutions, educational and research institutions as well as industrial institutions suitable for cooperation. In a cluster definition one can not forget the influence of the so-called soft factors that represent the social capital. They can be understood as a set of rules whether formal (norms) or informal (trust, cultural coherence) which create space for cooperation. The proposed cluster based on these facts concentrates interconnected businesses and institutions which improves innovation performance and competitiveness.

## 4. Discussion

Based on the above mentioned, we executed the SWOT analysis of the Murcia region as shown in the following table. (Tab. 2) Importance on a scale of 1 to 5 was assigned to each factor and effect of each factor was rated by the points from 1 to 3. In both ranges 1 is the lowest possible rating. By multiplying the chosen values of importance and effect we get the total value of the factor and by summing all the total values we get a full score for the area.

Table 2: The SWOT analysis of the Murcia region

<b>STRENGTHS</b>	<b>Importance</b>	<b>Effect</b>	<b>Value</b>	<b>WEAKNESSES</b>	<b>Importance</b>	<b>Effect</b>	<b>Value</b>
Year-round good weather	5	3	15	Weak marketing	4	2	8
Direct access to the sea and the fabled beaches	4	1	4	Insufficient linking of companies and sectors	4	3	12
Rich history and culture	3	3	9	Insufficiently trained staff	2	3	6
Gastronomy	3	2	6	Most tourists "low-cost" holidays	3	2	6
Modern technologies implementation	3	2	6	More than ¾ of domestic tourists	4	3	12
<b>Σ STRENGTHS</b>	<b>40</b>			<b>Σ WEAKNESSES</b>	<b>44</b>		
<b>OPPORTUNITIES</b>	<b>Importance</b>	<b>Effect</b>	<b>Value</b>	<b>THREATS</b>	<b>Importance</b>	<b>Effect</b>	<b>Value</b>
Underdeveloped tourist areas	5	3	15	Rent apartments instead of hotels and hostels	5	3	15
Boom of health tourism	3	2	6	High corruption	2	2	4
Attracting more international tourists	3	3	9	The private sector not included in the government's strategic plans	2	2	4

Services packages creation	3	2	6	Insufficient links between education system and needs of economic region	3	2	6
Linking support industries	3	2	6	Excessive bureaucracy discourages investors	4	2	8
<b>Σ OPPORTUNITIES</b>	<b>42</b>			<b>Σ THREATS</b>	<b>37</b>		

Source: Own elaboration based on BBVA, (2017).

After subtraction the values (Strengths – Weaknesses and Opportunities – Threats) we acquired values that indicate the resulting strategy – alliance strategy. This strategy is chosen by cluster in which weaknesses dominate over strengths but is operating in an attractive environment. Cluster seeks to strengthen current position and eliminate shortcomings in order to take advantage of opportunities for which is lacking strengths or resources. We consider the Valencian Community as the most suitable ally for several reasons. The Valencian Community has experience with the operation of the tourism cluster and annually attracts several million tourists. Is also located adjacent to the Murcia region what offers benefits of cooperation (e.g. promotion and marketing, possibility of “exchanging” tourists). Regions’ capitals Valencia and Murcia are about 2.5 hours apart by car. Areas of Alicante, Benidorm, Altea that are important for tourism are placed close to Murcia. There exists an opportunity to create a joint strategy within the tourism agencies would promote the possibility of a trip to the neighbouring region. Based on the close proximity this model would be an exciting revival attracting tourists and benefits to both regions.

## 5. Conclusion

The Murcia region shows high potential for creating a successful tourism cluster but it has to solve a few problems. The primary goal is to gain more foreign tourist who spend more money outside the hotels. Public debt (27% of regional GDP in 2015) is a big problem. Therefore, the region must focus on policy and structural reform that will lead to a reduction of the deficit, improvement of human capital, job creation and structural reforms. Another necessary step is the digital transformation of industry and services in which is Murcia currently lagging behind the national average. Improving the situation in long term brings an increase in regional competitiveness. Tourism should be used as a tool of other sectors growth. Well-built strategy can guide tourists to buy local products. We found out different types of tourism in the region: beach and sun, countryside and nature tourism, wellness, trips business trips, health tourism, eco tourism, etc. providing high potential for its further development. The development of these activities due to the demand for tourism will strengthen the competitiveness of the whole economy and will enhance the attractiveness of the region. Part of the process is to attract businesses, investment and new inhabitants to strengthen physical and human capital of the Murcian economy. All of these complementary sectoral relationships make it possible to talk about tourism as an economic activity capable of creating a powerful cluster of services that contributes to the quality of life improvement in the region. The proposed cluster should focus on a strategy aimed at reducing corruption in the region, creating high-quality horizontal and vertical links between businesses and industries, promoting the region at international level by quality marketing and advertising campaigns, promoting luxury hotels and their offerings to attract foreign tourists from markets such as Russia and China, cooperating with the Valencia tourism cluster, focusing on the study visits with aim to gain experience abroad and creating a concept of health, gastronomy, cultural, educational, language, eco, labour and shopping tourism. The Murcia region presents high potential for

creating successful tourism cluster. Due to right policy and supporting cluster members can the region get international attention, help to create new jobs and lead to revived region's economy.

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# POSSIBILITIES TO MONITOR AND QUANTIFY THE IMPACT OF ECONOMIC GLOBALIZATION ON POPULATION HEALTH THROUGH AVOIDABLE AND AMENABLE MORTALITY

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**Abstract.** Globalization is a dynamic process that has different implications in different areas. The impact of globalization on health can be assessed in two main dimensions: health services (in structure and availability) and social determinants of health. Economic globalization significantly affects social determinants in health, increases the role of the market in healthcare, reduces the role of the state and the public sector, supports the modernization of the healthcare sector through corporatisation and privatization, influenced by international actors etc. Absence of monitoring of these impacts and underestimating the risks of globalization to population health can cause an increase of chronic illness, following by a loss of economic competitiveness and widening of health disparities. The aim of the paper is to point out the impact of economic globalization on population health at the national and international level. We will focus on assessing the impact of an unbalanced health policy approach, where is underrated the role and support of public health, insufficient investment in healthcare etc. In the analytical section of paper, we evaluate the development of avoidable as well as amenable mortality in Slovakia and EU in the years 2002 - 2014. We also quantify the avoidable and amenable mortality in relation to economic and health categories and we evaluate their development in this period. Finally, we critically evaluate the potential negative impacts of the inadequate reflection of Slovak health policy objectives on the issue of the impact of economic globalization on Slovak population health.

**Keywords:** avoidable mortality, amenable mortality, economic globalization, health policy, health inequality

**JEL Classification:** I14, I18, H51.

## 1. Introduction

Globalization processes and a fast spread of communicable diseases increase an importance of solving the health issue in a worldwide scale, while focusing on elimination of disparities in health area. Health issue is a main point of many discussions in business, security, diplomacy, but also it is present in many contemporary discussions of mobility and migration. Health care expenses are increasing faster than incomes, despite a significant rate of state budgets on health system financing in most of the countries. Many expenses in health system are determined by an offer – new ways of a treatment and technologies, increasing expectations of people of a high quality health care, etc. The processes of demographic aging are closely associated with long-term pressures on increasing their efficiency as well as a system flexibility that is related



to permanent changes in economic systems. At present, higher support of primary health care as well as integrated health care gain prominence. (Gavurova et al. 2017a) The most numerous diseases and reasons of mortality had moved from infectious group of diseases into chronic group of diseases over the past three decades. The regulation processes that are connected with morbidity and mortality elimination require application of adequate concepts and implementation of their results into relevant policies.

## **2. Development of amendable and preventable mortality on a national and international scale**

The notion “mortality” is a complex notion that may be confronted with a notion “avoidable mortality” and “amenable mortality”. Amenable mortality as well as preventable mortality belong to a subgroup of avoidable mortality. (Tobias & Jackson, 2001; Simonato et al. 1998) Avoidable mortality was developed by a group of scientists from the American Working Group on Preventable and Manageable at Harvard University (Rutstein et al., 1976) and it was defined as “a number of deaths as a consequence of particular groups of diseases that are considered as either amenable, or preventable by means of health care services”. This group of scientist created a notion “unnecessary untimely deaths” by forming a list of diseases that would not expect death unless early and efficient health care is provided. Health care was defined as prevention, a treatment and a care in the broadest sense of the word. Most of the scientific studies related to analysis of avoidable mortality date back to 1980s – 1990s. The concept was also developed by many other European researchers (e.g. Mackenbach et al., 1990; Westerling, 2001; Holland et al., 1997) at that time. In recent years, Nolte & McKee (2008) and Tobias & Yeh (2009) revised this concept, which led to updating the list of diseases according to the recent developments in medical knowledge and technologies. Newly updated list consisted of 34 death reasons and this concept was applied in the EU countries (EU – 15). The latest study of amenable mortality was led by world universities: Erasmus Medical University and London School of Hygiene and Tropical Medicine. It is a project financed by the EU funds: ‘Avoidable Mortality in the European Union: towards better Indicators for the Effectiveness of Health Systems’. (Plug et al., 2011) The AMIEHS’s (Plug et al. 2011) outcome was a development of a newer concept that involves a significant change of structure in the list of death’s reasons. At present, the Eurostat methodology, which is modified in comparison to given methodologies, is used. The detailed structure of individual methodologies and their limitations are subject to research study of Gavurová & Vagašová (2017).

## **3. Methodology and database**

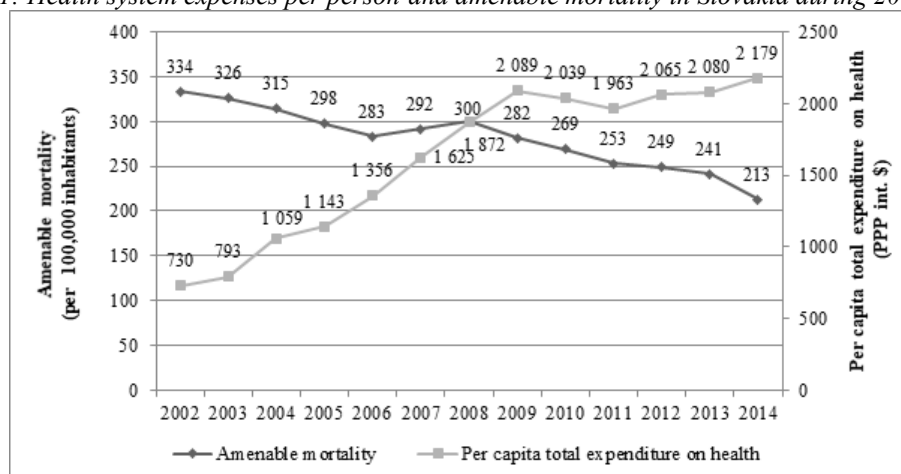
Mortality development was evaluated by standardized mortality rates (SMR), which were calculated by a direct method, while using a reference age structure that corresponds to, so-called European standard population (published by WHO). The analysis of individual death reasons groups’ influence on mortality change was performed by evaluating the Temporary Life Expectancy from birth till 75 years and its change. This life expectancy determines an average number of years lived by a person until his/her 75<sup>th</sup> birthday provided that mortality ratios captured in mortality table will not change until his/her death. (Burcin and Kucera, 2008) The amenable mortality rates were conveyed by age standardized mortality rate (SMR) per 100 000 people. The method of direct standardization by means of the European standard population was used. The rates of amenable mortality were calculated by means of WHO database on the basis of data which reflected a number of dead based on death reasons, sex, and

in divisions of five-year age categories. Database included data from 20 European countries between the years 2002 – 2013. The remaining 8 EU countries were not involved in the analysis as the available data were not in accordance with requirements of avoidable mortality concept due to their incomplete nature. The Statistical Office of the SR provided information of deaths' number in given categories for the past year, 2013 when speaking of Slovakia. The statistical database of the United Nations Economic Commission for Europe (UNECE) provided data of a medium status of population in individual age groups and sex in each year. The mortality rates for all diseases were standardized by age, while using, so-called European standard population as a consequence of an option for international comparison. Standardized mortality rates according to sex were calculated for all death reasons in the individual European countries during the years 2002 - 2013 and for Slovakia during 2002 – 2014. The European standard population data according to age groups were obtained from the Eurostat. WHO published information of total expenses on health system per person, which were described in purchasing power parity (PPP), international currency, USD. The analysis was realized by means of Microsoft Access and Excel. The parabolic trend line is used to describe the development of the observed dimension.

#### 4. Analysis and results

The calculation of amenable mortality was performed by AMIEHS method (Plug et al. 2011) that was used in many available research studies and it provides a broader comparable overview of research studies' results. In Figure 1, there are illustrated the outcomes of multiple analyses of amenable mortality development according to given methodology and estimated life expectancy when born in Slovakia during the years 2002-2014.

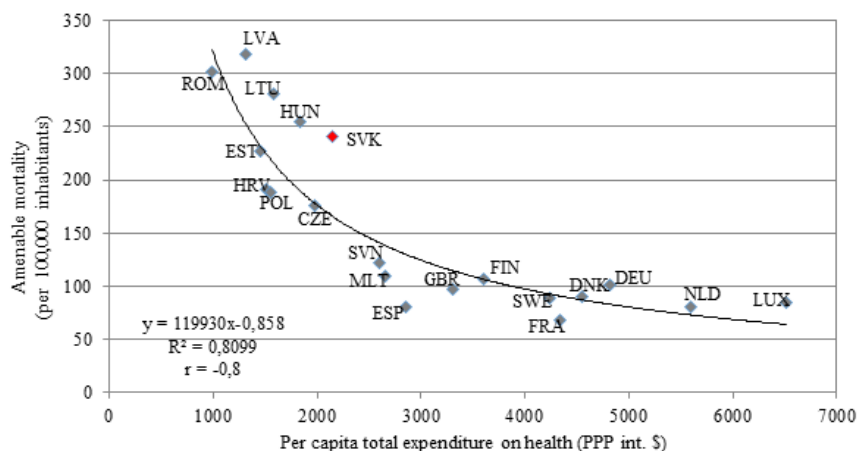
Figure 1: Health system expenses per person and amenable mortality in Slovakia during 2002 – 2014



Source: AM – own calculations according to the AMIEHS method based on the SR mortality database; Health system expenses per person - WHO.

The development of amenable mortality in comparison to health system expenses per person (USD in PPP) was an interesting fact from economic point of view. As the given values show, the trend in the amenable mortality development is relatively favorable in general and it has a decreasing tendency since 2008. Slight increase may be caused by a method change in data provisioning for national register before 2008. Health system expenses also declare an increasing tendency, except years 2009 and 2010. Amenable mortality was examined at international level in relation to economic and medical categories. Figure 2 illustrates a relation between amenable mortality and health system expenses in the EU countries.

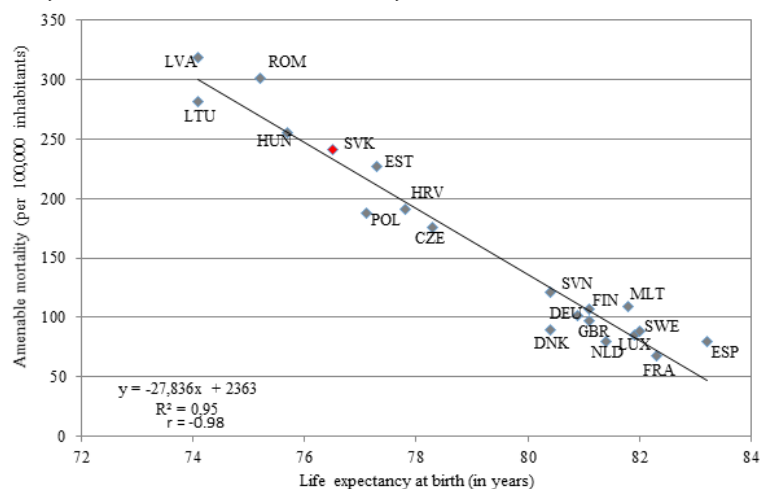
Figure 2: Health system expenses per person and amenable mortality in the EU countries, 2013 or the last available year



Source: AM – own calculations according to the WHO mortality data; Health system expenses per person – WHO

It is obvious that those countries which lie above the trend line show worse results of health care than the countries with estimated volume of expenses per health system. On the other hand, countries, which lie below the trend line, such as Estonia, Croatia and Poland show lower amenable mortality together with lower expenses in comparison to Slovakia. Those countries whose values are illustrated at the same horizontal level, for example Spain (ESP) and Netherlands (NLD), or countries that are located on left side below the line could represent higher quality level and more effective health care system as they reach a comparable level of amenable mortality per lower amount of expenses. On the other hand, when comparing Slovakia (SVK) and Czech Republic (CZE), both countries spend approximately the same amount of funds, but the standardized rate of amenable mortality in Slovakia is of one third higher than in Czech Republic. Finding an optimal relation between the level of health system financing and amenable mortality rate is a great challenge. The indicator of estimated life expectancy is often used in international comparisons of population's health as its data are mostly available for each country. The relation between estimated life expectancy and amenable mortality is displayed in Figure 3.

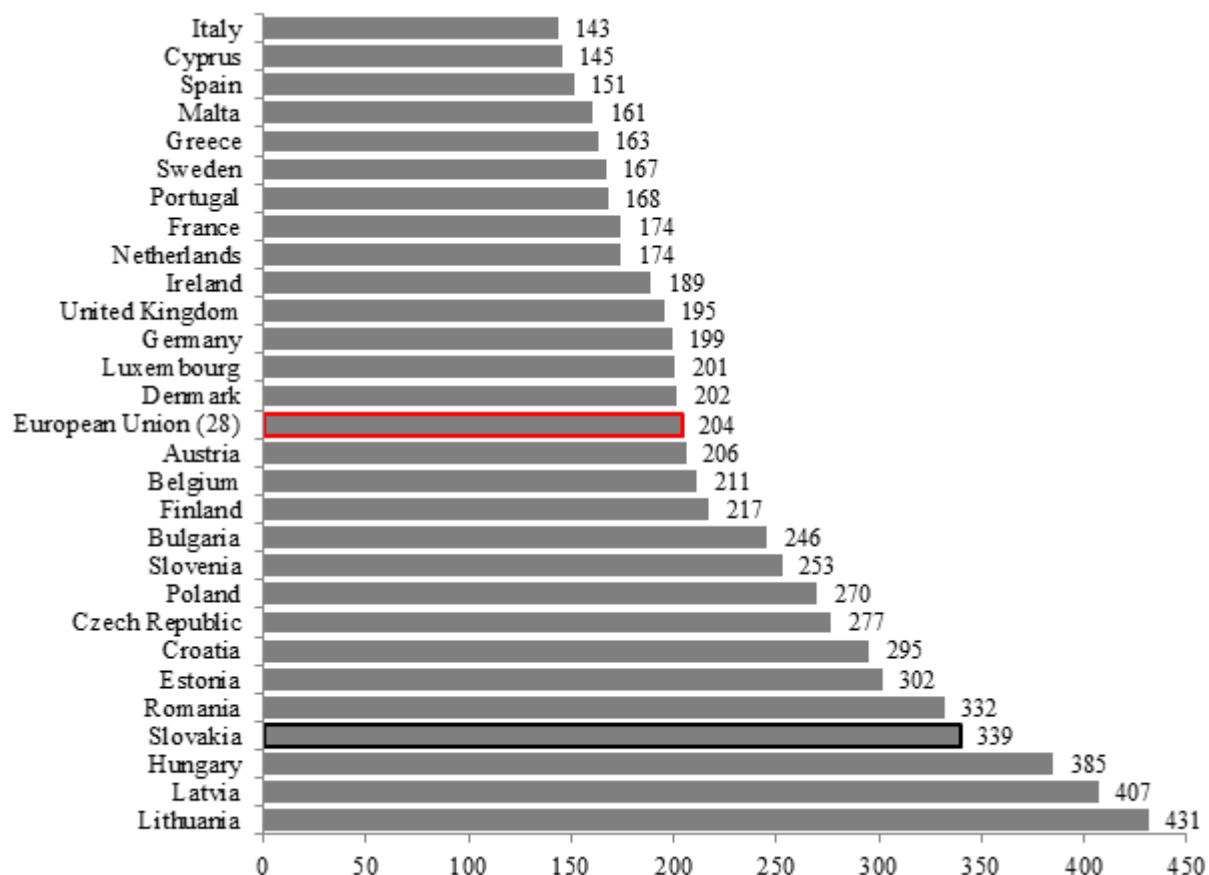
Figure 3: Life expectancy in birth and amenable mortality in the EU countries, 2013 or the last available year



Source: AM – own calculations according to the WHO mortality data; Life expectancy – OECD

There exists a high negative correlation between amenable mortality and estimated life expectancy, which was determined by linear regression and also confirmed by a study of Gay et al. (2011). The results are influenced by a fact that amenable mortality is partially involved in a calculation of estimated life expectancy. Some countries have the same estimated life expectancy, but they differ in values of amenable mortality (e.g. Lithuania, Denmark and Great Britain). These results indicate a higher success of treatment in these countries. However, it is necessary to take into consideration one fact – amenable mortality reflects on influences of various factors, such as lifestyle, and these also include information of health system efficiency, especially primary one. (Jougl, 2013) Results of this study declare that ischemic heart diseases, cerebrovascular diseases and colorectal cancer represent the major reasons of death in the AM (amenable mortality) and they explain almost a third of the total AM in the EU countries in 2013. (Gavurova et al. 2017b) It is possible to find links of these results with a high prevalence of given diseases in the EU, similarly as the study by Nichols et al., 2014 confirms. It may be stated that there exists a wide space for increasing an efficiency of treatment. Other evidence of these statements may be related to a number of available medical technologies in the countries that contribute to revelation of the first diseases' phases. As a consequence of this fact, it is necessary to carefully interpret these results of the individual health systems' efficiency and form the scales of countries. Figure 4 illustrates the order of the researched European countries in the form of values of standardized rate of preventable mortality in the EU countries (according to Eurostat methodology).

Figure 4: Standardized rate of preventable mortality per 100 000 inhabitants in the EU countries, 2013



Source: own processing according to Eurostat

As the analysis results show, Slovakia belongs to the countries with very low efficiency of health system in comparison to an average value of preventable mortality of the EU. Here also

belong other countries of the Visegrad Group, while Poland and Czech Republic show better results than Slovakia and Hungary. If these results are compared with values of amenable mortality from V4 countries, Czech Republic shows the best results, then Poland, Slovakia and Hungary. It may be observed based on a detailed research of mortality development according to individual diagnosis that ischemic heart diseases, cerebrovascular diseases and colorectal cancer represent the major reasons of death in the amenable mortality and they explain almost a third of the total AM in the EU countries in 2013. (Gavurova et al. 2017b) These results are connected to a high prevalence of these diseases in the EU, which may be confirmed by a study of Nichols et al. (2014). Despite the fact that indicator of amenable mortality has certain limitations, its contribution lies in explaining the sole influence of health system on population health without any influence of other factors. This concept requires a constant development and updating of diseases' list, which reflects on a change in population health of the individual countries to provide a high quality international benchmarking. The issue of amenable and preventable mortality represents an attractive conceptual proposal for evaluating quality and efficiency of health systems and it provides new information that absent in general mortality indicators, which are usually used for measuring results of health systems. In health policy of the SR, the concepts of amenable and preventable mortality are minimally used due to their methodological complexity and problematic database in spite of the fact they bring many analytical platforms, for example for deeper researching of potential gains in life expectancy. (Gavurová & Vagašová, 2017) These are very important for creating the targeted prevention programs. Further researches of connections and influences related to diseases' prevalence and mortality development will enable an improvement of health system efficiency measurement and will support international comparison. Significance of these concepts increases in a period of increasing health risks and threats related to globalization processes.

## 5. Conclusion

In recent years, the questions of globalization influence on a health are discussed in relation to processes of demographic population aging. Globalization influence on a health may be complexly considered from the point of availability structure of health services and social health determinants. Structure and availability of health services as well as optimal system settings of diagnostic and treatment processes are closely interconnected with categories of efficiency and quality of health care. Concept of amenable mortality, which was also used in the article to fulfill its aim, is used to measure health care systems' efficiency. The aim of the paper is to point out the impact of economic globalization on population health at the national and international level. The outcomes of analysis brought many interesting findings. Slovakia belongs to countries with lower health system efficiency in comparison to an average value of amenable mortality in the EU based on the analysis's results. The individual countries differ in the amount of funds spent on health system however there are those countries that with almost the same amount of health expenses show different level of amenable mortality. Slovakia with almost of one third higher mortality than in Czech Republic in the same amount of funds belongs to this group. Therefore, it is necessary to examine other result indicators of health, such as life expectancy in evaluating health system efficiency of the individual countries. Present geopolitical situation, impacts of globalization processes connected with demographic population aging, rapid technological development in medicine, increase of chronic diseases' number requires multi-disciplinary approach to measurement and evaluation of health systems' efficiency. This requires an intensive co-operation of international research teams in developing concepts and building a database of high quality.

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# GLOBAL COMPARISON OF THE EFFICIENCY OF HEALTH CARE SYSTEMS USING MALMQUIST INDEX

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**Abstract.** Health care is one of the largest industries in the world. Even though challenging economic conditions are making it difficult for governments to devote the necessary financial resources to handle expanding health care demands, in recent years most countries have made impressive progress in ensuring better health services – especially those services aimed towards improving infant health and towards increasing life expectancy. Evaluating the efficiency of healthcare systems is a very complex problem. There has been a long-lasting interest in the analysis of the efficiency of health care systems using nonparametric and parametric applications. This paper aims at global comparison of the efficiency of healthcare systems in WHO countries by applying data envelopment analysis (DEA). For this purpose, statistical data of 177 WHO countries for 2015 are used. One input (general government expenditure on health as a percentage of gross domestic product) and four outputs (life expectancy at birth, life expectancy at age 60, infant mortality rate, and neonatal mortality rate) are used for the analysis. In this paper we identify 10 efficient countries. In the second part of this paper we evaluate efficiency changes in the healthcare systems of selected countries during 2005, 2010, and 2015 by applying Malmquist index. The results of this study assert that the efficiency of healthcare systems has improved in 71 countries during 2005 – 2010 and in 21 countries during 2010 – 2015.

**Keywords:** healthcare, efficiency, Malmquist index, data envelopment analysis

**JEL Classification:** C14, H51, I18

## 1. Introduction

Ľudia považujú dobrý zdravotný stav za jednu z najdôležitejších vecí. Prináša veľa ďalších benefitov, napríklad lepší prístup na trh práce, vyššiu produktivitu práce, redukciu výdavkov na zdravotníctvo, dobré sociálne vzťahy a, samozrejme, dlhší život.

V septembri 2012 Valné zhromaždenie Organizácie Spojených národov prijalo novú rozvojovú agendu: *Premena nášho sveta: Agenda pre udržateľný rozvoj 2030*. (OSN, 2012) Program obsahuje 17 cieľov, pričom jeden z najdôležitejších je cieľ č. 3: Zaisťovať zdravý život a zvyšovať jeho kvalitu pre všetkých v akomkoľvek veku. V posledných desaťročiach sme zaznamenali výrazný nárast výdavkov na zdravotníctvo. Tieto výdavky sú z veľkej časti financované z verejných zdrojov – napr. v krajinách OECD je to viac ako 70 %. (OECD, 2017) Je teda prirodzené, že politici prejavujú zvýšený záujem o pochopenie fungovania zdravotných systémov so zreteľom na to, či sú peniaze investované do zdravotníctva využívané efektívne, alebo existuje priestor na zlepšenie.



Od druhej polovice minulého storočia sme zaznamenali veľké množstvo nových metód na výpočet hranice efektívnosti. Tieto metódy zvyčajne rozdeľujeme na parametrické (napr. SFA) a neparametrické (napr. DEA, FDH). Každá z týchto metód má svoje výhody a nevýhody. Podrobný prehľad štúdií hodnotiacich efektívnosť zdravotných systémov nájdeme v (Varabyova & Müller, 2016). Mnohí autori sa venujú porovnávaniu zdravotných systémov v celosvetovom meradle. Napríklad na hodnotenie efektívnosti zdravotných systémov v 191 krajinách WHO aplikovali Grosskopf et al. (2006) neparametrickú metódu pozostávajúcu z 5 modelov DEA analýzy, zatiaľ čo Evans et al. (2001) a Greene (2004) použili parametrické metódy – regresnú analýzu resp. stochastickú analýzu produkčnej hranice. Parametrické a neparametrické metódy hodnotenia efektívnosti vo svojej práci porovnali Hollingsworth & Wildman (2003).

V ďalších štúdiách sa autori venujú len niekoľkým vybraným štátom. (Asandului et al., 2014) pomocou DEA analýzy hodnotia efektívnosť zdravotných systémov v 30 vybraných európskych štátoch. Wranik (2011) aplikovala stochastickú metódu produkčnej hranice na 21 krajín OECD. Podrobné hodnotenie efektívnosti zdravotných systémov vo všetkých 28 krajinách EÚ s použitím veľkej škály parametrických aj neparametrických metód nájdeme v publikácii *Efficiency estimates of health care systems* vydanej Generálnym direktoriátom Európskej komisie pre ekonomické a finančné záležitosti. (Medeiros & Schwierz, 2015)

Doteraz uvedené metódy umožňujú vzájomne porovnávať nielen efektívnosť zdravotných systémov jednotlivých štátov, ale aj merať efektívnosť územných celkov konkrétneho štátu. Napríklad pomocou DEA analýzy Stefko et al. (2016) porovnávajú zdravotnú starostlivosť v 8 samosprávnych krajoch na Slovensku, Campos et al. (2016) hodnotia efektívnosť v 17 autonómnych spoločenstvách Španielska a Tsai & Molinero (2002) hodnotia 27 vybraných jednotiek Národnej zdravotnej služby vo Veľkej Británii. Porovnanie troch najpoužívanějších metód na hodnotenie efektívnosti zdravotných systémov nájdeme v Di Giorgio et al. (2016).

## 2. Metóda obálky dát (DEA analýza)

Metóda **Data Envelopment Analysis (DEA)**, čo by sme mohli preložiť ako analýza obalu dát, patrí medzi významné prostriedky ekonomického manažmentu. Je vhodná na použitie vo verejnom sektore, v ktorom mnohé služby nemajú stanovenú trhovú cenu. V posledných rokoch bola DEA analýza použitá na analýzu efektívnosti rôznych typov jednotiek, napríklad zdravotných systémov, vzdelávacích systémov (Böhm & Böhmová, 2016), miest, bezpečnostného manažmentu (Böhm & Vojteková, 2016), väzníc a pod. DEA je vhodná na analýzu v podstate akejkoľvek relatívne homogénnej skupiny jednotiek, nevyžaduje znalosť produkčnej funkcie, ktorá zodpovedá daným jednotkám, takže môže byť použitá aj v prípadoch, keď iné metódy zlyhávajú.

### 2.1 Modifikácie základných modelov

Pri hodnotení efektívnosti je často potrebné modifikovať základné modely DEA analýzy – CCR a BCC. (Böhmová, 2012) V základných modeloch predpokladáme, že zvýšenie výstupu spôsobí zvýšenie efektívnosti a žiaduce výstupy sú teda maximalizačné. V reálnych situáciách sa však stretávame aj s výstupmi, ktoré sú nežiaduce a ich nižšia hodnota vedie k vyššej efektívnosti – môžeme spomenúť počet reklamácií, počet úmrtí a pod. V tom prípade je potrebné použiť DEA model s nežiadúcimi výstupmi. (Jahanshahloo et al., 2005) V praxi môžu nastať situácie, výsledkom ktorých je nutné obmedzenie váh vstupov, resp. výstupov. Takéto situácie vyplývajú priamo z úlohy alebo vznikajú pri riešení CCR modelu, ktorého výsledkom

sú optimálne váhy, pre ktoré je podiel niektorých zložiek neprimerane veľký. V takýchto situáciách je možné použiť model Assurance Region, ktorý rieši problém nulových váh a odstraňuje pseudoeфективnosť.

## 2.2 Malmquistov index

Meranie zmien efektívnosti samozrejme zahŕňa určenie zmien vstupných hodnôt a príslušných výstupných hodnôt. Hodnotenie vývoja efektívnosti v čase však zahŕňa aj zmeny výrobných technológií. Pomocou nových technológií je možné zvýšiť efektívnosť podniku aj bez významného zásahu manažérov. Preto je vhodné oddeliť zmenu efektívnosti spôsobenú zmenou technológií od zmeny efektívnosti spôsobenej aktívnymi zásahmi manažmentu podniku. Jedným z takýchto nástrojov DEA analýzy je Malmquistov index (MI). (Färe et al., 1994) Index umožňuje hodnotiť viacnásobné vstupy a výstupy bez cenových informácií, t. j. vo fyzických jednotkách. Umožňuje pri hodnotení zmien efektívnosti v čase rozkladať ich do dvoch zložiek: zmeny relatívnej efektívnosti jednotky voči súboru zvyšných jednotiek a zmeny hranice produkčných možností vyvolané technológiami.

Malmquistov index  $M_q$ , ktorý meria zmenu efektívnosti produkčnej jednotky  $DMU_q$  medzi dvomi po sebe nasledujúcimi obdobiami  $t$  a  $t + 1$ , je definovaný nasledovne (Böhmová, 2012):  $M_q = E_q \cdot P_q$ , kde  $E_q$  je zmena relatívnej efektívnosti jednotky  $q$  vzhľadom k ostatným jednotkám medzi obdobím  $t$  a  $t + 1$  a  $P_q$  popisuje zmenu hranice produkčných možností v dôsledku vývoja technológií medzi obdobím  $t$  a  $t + 1$ .

## 2.3 Výber vstupných a výstupných indikátorov

V našej práci sme použili údaje zo 177 krajín WHO za roky 2005, 2010 a 2015. Z dôvodu nedostatku dát sme vo výpočtoch nezahrnuli 15 štátov. Vstupným indikátorom boli výdavky verejnej správy na zdravotníctvo ako percento HDP. Je to jeden z najdôležitejších indikátorov popisujúcich financovanie zdravotných systémov. Zahŕňa nielen zdroje, ktoré sa poskytujú prostredníctvom štátnych rozpočtov, ale aj výdavky na zdravotníctvo zo strany mimorozpočtových subjektov a povinného zdravotného poistenia. Keďže posledné dostupné údaje sú z roku 2014, použili sme regresnú analýzu na predikciu vývoja hodnoty tohto ukazovateľa v roku 2015.

Ako výstup sme použili štyri kritéria. Prvým bola očakávaná dĺžka života žien pri narodení, ktorá sa v globálnych porovnaniach uprednostňuje voči štatistike za celú populáciu, pretože ženy menej podliehajú negatívnym vplyvom životného štýlu a majú menej rizikové správanie. Druhým použitým výstupným indikátorom je očakávaná dĺžka života žien vo veku 60 rokov. Ďalším výstupom je miera novorodeneckej úmrtnosti, ktorá je považovaná za užitočný indikátor zdravia a zdravotnej starostlivosti o matky a novorodencov. Udáva sa ako pravdepodobnosť úmrtia počas prvých 28 dní života na 1000 narodených detí. Posledným použitým výstupným indikátorom je miera detskej úmrtnosti. Je udávaná ako pravdepodobnosť úmrtia medzi pôrodom a prvým rokom života na 1000 narodených detí. Odráža sociálne, ekonomické a environmentálne podmienky, v ktorých deti a ich rodiny žijú.

## 3. Výsledky

Náš výskum mal dva ciele. Prvým bolo porovnanie efektívnosti zdravotných systémov krajín WHO v roku 2015 a druhým cieľom bolo porovnanie zmien efektívnosti zdravotných systémov v rokoch 2005, 2010 a 2015.

### 3.1 Základné štatistické ukazovatele

V tabuľke 1 sú uvedené základné štatistické ukazovatele vstupov a výstupov krajín WHO v roku 2015. Najnižšie výdavky na zdravotníctvo má Laoská ľudovodemokratická republika (2,7 %) a najvyššie výdavky majú Maldivy (29,1%). Očakávaná dĺžka života žien pri narodení je najnižšia v Sierra Leone (50,8 rokov) a najvyššia je v Japonsku (86,8 rokov). Očakávaná dĺžka života žien vo veku 60 rokov je najnižšia v Sierra Leone (13,1 rokov) a najvyššia je v Japonsku (28,7 rokov). Detská úmrtnosť je najnižšia v Luxembursku (1,5 detí na 1000 narodených detí) a najvyššia v Angole (96 detí na 1000 narodených detí). Novorodenecká úmrtnosť je najnižšia v Japonsku, Islande a Luxembursku (0,9 detí na 1000 narodených detí), najvyššia je opäť v Angole (48,7 detí na 1000 narodených detí).

Table 1: Základné štatistické ukazovatele vstupných a výstupných parametrov krajín WHO v roku 2015

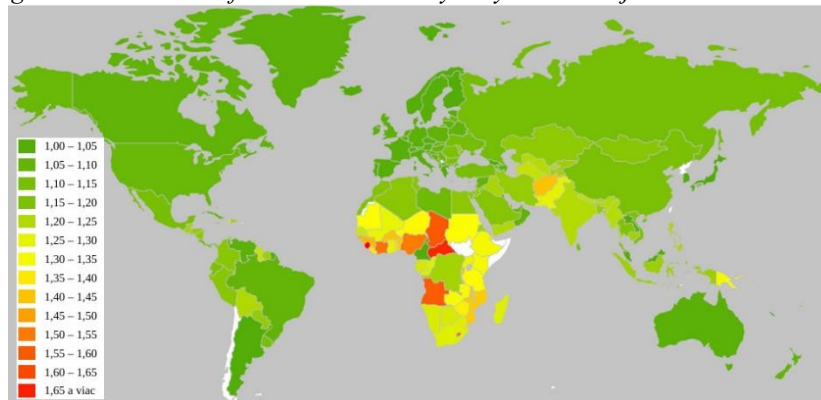
	Minimum	Maximum	Aritmetický priemer	Medián	Smerodajná odchýlka	95% interval spoľahlivosti
Výdavky na zdravotníctvo v %	2,7	29,1	11,73	11	4,9	10,9 – 12,4
Očakávaná dĺžka života pri narodení	50,8	86,8	74	76,3	8,2	72,8 – 75,3
Očakávaná dĺžka života vo veku 60 rokov	13,1	28,7	21	20,9	3,4	20,5 – 21,5
Detská úmrtnosť na 1000 narodených detí	1,5	96	23,4	14,5	21,6	20,2 – 26,6
Novorodenecká úmrtnosť na 1000 narodených detí	0,9	48,7	13,3	9,6	11,1	11,7 – 15

Source: Vlastné spracovanie z údajov WHO

### 3.2 Efektívnosť zdravotných systémov krajín WHO v roku 2015

Na hodnotenie efektívnosti využitia vynaložených finančných prostriedkov na zdravotníctvo sme vykonali DEA analýzu s jedným vstupom a štyrmi výstupmi. Použili sme variabilné výnosy z rozsahu. Na zabezpečenie nenulovosti parametrov sme použili Assurance region model s obmedzeniami váh v tvare  $p_i < 10 p_j$ ,  $i \neq j$ . Identifikovali sme 10 efektívnych krajín: Argentínu, Kamerun, Cyprus, Gruzínsko, Grécko, Japonsko, Laos, Luxembursko, Južnú Kóreu a Singapur. Najnižšiu efektívnosť dosahuje Sierra Leone (1,85), ďalej nasledujú Stredoafrická republika (1,79), Čad (1,70), Angola (1,69) a Lesotho (1,67). Pripomeňme, že napr. efektívnosť 1,85 pre Sierra Leone znamená, že na dosiahnutie efektívnosti by pri nezmenených vstupoch mala zvýšiť svoje výstupy o 85 %. Efektívnosť zdravotných systémov krajín WHO je znázornená na obrázku 1.

Figure 1: Rozdelenie efektívnosti zdravotných systémov krajín WHO v roku 2015



Source: Vlastné spracovanie z údajov WHO.

Okrem efektívnosti hodnotených jednotiek DEA analýza umožňuje zistiť to, aké by mali byť hodnoty výstupných parametrov, aby sa neefektívna jednotka stala efektívnou.

Napríklad Slovensko má efektívnosť 1,05. Na financovanie zdravotného systému Slovensko vynakladá 15,14 % zo všetkých verejných výdavkov, očakávaná dĺžka života žien pri narodení je 80,2 rokov, očakávaná dĺžka života žien vo veku 60 rokov je 22,9 rokov, detská úmrtnosť je 5,8 detí na 1000 narodených detí a novorodenecká úmrtnosť je 4,2 detí na 1000 narodených detí. DEA analýza pre Slovensko identifikovala dva vzorové štáty – Japonsko a Luxembursko, s koeficientami 0,2886 a 0,7114. Na základe týchto údajov vieme vypočítať, aké hodnoty výstupných parametrov by malo Slovensko dosahovať, aby bolo efektívne. Tieto cieľové hodnoty sú uvedené v tabuľke 2.

Table 2: Skutočné a cieľové hodnoty výstupných parametrov pre Slovensko

	Skutočné hodnoty	Cieľové hodnoty
Očakávaná dĺžka života pri narodení	80,2	84,8
Očakávaná dĺžka života vo veku 60 rokov	22,9	26,7
Detská úmrtnosť na 1000 narodených detí	5,8	1,6
Novorodenecká úmrtnosť na 1000 narodených detí	4,2	0,9

Source: Vlastné spracovanie z údajov WHO.

### 3.3 Zmena efektívnosti zdravotných systémov v rokoch 2005, 2010 a 2015

V druhej časti práce sme sledovali časový vývoj efektívnosti zdravotných systémov krajín WHO medzi rokmi 2005 a 2010 a medzi rokmi 2010 a 2015. Zmenu efektívnosti sme merali prostredníctvom Malmquistovho indexu, ktorý sa dá vyjadriť ako súčin relatívnej efektívnosti jednotky a zmeny hranice produkčných možností. Medzi rokmi 2005 a 2010 došlo k zvýšeniu efektívnosti pri 71 štátoch. Najväčší nárast efektívnosti dosiahlo Malawi, najvýraznejší pokles sme zistili pre Rovníkovú Guineu. Malmquistov index spolu s relatívnou efektívnosťou a hranicou produkčných možností pre päť krajín s najväčším nárastom resp. poklesom efektívnosti medzi rokmi 2005 a 2010 uvádzame v tabuľke 3.

Table 3: Malmquistov index celkovej efektívnosti zdravotných systémov v rokoch 2005 – 2010.

Poradie	Štát	Relatívna efektívnosť	Hranica produkčných možností	Malmquistov index
1.	Malawi	1,150	1,032	1,187
2.	Zambia	1,164	1,012	1,177
3.	Sierra Leone	1,135	1,013	1,150
4.	Rwanda	1,131	1,010	1,143
5.	Konžská demokratická republika	0,995	1,146	1,140
131.	Slovensko	1,008	0,970	0,978
173.	Kuvajt	0,987	0,949	0,937
174.	Spojené arabské emiráty	0,953	0,969	0,923
175.	Mjanmarsko	1,000	0,860	0,860
176.	Haiti	0,645	1,247	0,805
177.	Rovníková Guinea	0,631	0,994	0,627

Source: Vlastné spracovanie z údajov WHO.

Medzi rokmi 2010 a 2015 došlo k zvýšeniu efektívnosti iba pri 21 štátoch. Najväčší nárast efektívnosti dosiahlo Haiti, najvýraznejší pokles sme zistili pre Čad. Malmquistov index spolu

s relatívnou efektívnosťou a hranicou produkčných možností pre päť krajín s najväčším nárastom resp. poklesom efektívnosti medzi rokmi 2010 a 2015 uvádzame v tabuľke 4.

Table 4: Malmquistov index celkovej efektívnosti zdravotných systémov v rokoch 2010 – 2015.

Poradie	Štát	Relatívna efektívnosť	Hranica produkčných možností	Malmquistov index
1.	Haiti	1,657	0,726	1,203
2.	Kamerun	1,578	0,762	1,203
3.	Konzská demokratická republika	1,336	0,826	1,103
4.	Mali	1,251	0,862	1,078
5.	Laos	1,329	0,766	1,018
75.	Slovensko	0,996	0,981	0,977
173.	Guyana	1,029	0,876	0,902
174.	Gabon	1,074	0,835	0,897
175.	Tanzánia	1,063	0,835	0,888
176.	Keňa	1,039	0,851	0,884
177.	Čad	0,989	0,892	0,883

Source: Vlastné spracovanie z údajov WHO.

Identifikovali sme 9 krajín, ktorých efektívnosť zdravotných systémov sa zlepšila v oboch sledovaných obdobiach. Sú to Sierra Leone, Mozambik, Niger, Mali, Libéria, Laos, Gruzínsko, Kongo a Kamerun. Pomocou rozkladu Malmquistovho indexu na súčin relatívnej efektívnosti a hranice produkčných možností môžeme podrobnejšie charakterizovať zmenu efektívnosti hodnotenej jednotky – štátu. Túto skutočnosť si môžeme demonštrovať na príklade Slovenska. V sledovanom období 2005 – 2010 sa Slovensko z hľadiska efektívnosti zdravotných systémov nachádzalo na 131. mieste s hodnotou Malmquistovho indexu 0,978. Relatívna efektívnosť mala hodnotu 1,008 a hranica produkčných možností bola 0,970.

## 4. Conclusion

Cieľom tohto článku bolo globálne porovnanie efektívnosti systémov zdravotnej starostlivosti v krajinách WHO pomocou analýzy obálky dát (DEA). Identifikovali sme 10 efektívnych krajín: Argentínu, Kamerun, Cyprus, Gruzínsko, Grécko, Japonsko, Laos, Luxembursko, Južnú Kóreu a Singapur. Najnižšiu efektívnosť dosahuje Sierra Leone.

V druhej časti práce hodnotíme zmeny efektívnosti zdravotných systémov vybraných krajín v rokoch 2005, 2010 a 2015. Zistili sme, že efektívnosť systémov zdravotnej starostlivosti sa v rokoch 2005 - 2010 najviac zvýšila v Malawi a najviac znížila v Rovníkovej Guinei. V rokoch 2010 – 2015 došlo k najväčšiemu nárastu efektívnosti v Haiti a Kamerune a k najväčšiemu poklesu v Čade. V rokoch 2005 až 2010 sa medzi štátmi s najväčším nárastom efektívnosti na prvých štrnástich miestach nachádzajú štáty z Afriky. Najväčší pokles efektívnosti mala Rovníková Guinea, pričom osem z desiatich štátov s najväčším poklesom efektívnosti bolo z juhovýchodnej a juhozápadnej Ázie. Medzi rokmi 2010 až 2015 bolo z desiatich štátov s najväčším nárastom efektívnosti osem z Afriky. Podobne sedem z desiatich štátov s najväčším poklesom efektívnosti bolo z Afriky. Zaujímavým prípadom je štát Haiti, ktorý mal v rokoch 2005 až 2010 druhý najväčší pokles efektívnosti, zatiaľ čo v období 2010 až 2015 mal najväčší nárast efektívnosti. Z našich výpočtov ďalej vyplýva, že v európskych krajinách nedochádza k veľkým zmenám v efektívnosti zdravotných systémov. V rokoch 2005 a 2010 sa hodnota Malmquistovho indexu pohybovala od 0,966 pre Srbsko po 1,013 pre Rumunsko a Albánsko a v rokoch 2010 a 2015 bol Malmquistov index 0,94 pre Moldavsko a 1,03 pre Gruzínsko.

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## CUSTOMIZATION OF BUSINESS EDUCATION IN CONDITION OF GLOBAL LEARNING SPACE: RUSSIAN EXPERIENCE

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**Abstract.** It seems that learning space globalization should lead to unification of learning experience (previously educational institutions were framed by region or national-specific factors, which are now levelled: an educational institution teaches Indian, Russian and Chinese students more or less the same way). International accreditation systems also contribute to such unification, as they enforce standard framework for educational process. However, in reality we see a different situation: customization- up to a single learner's requirements - is a key competitive strength. Customization has become one of the key business principles for saturated markets. We have carried out a survey of Russian Association of Business Education members in order to identify tools that Russian business schools use to adapt to customization trend. The results of our surveys showed that they abandon long expensive educational programs for shorter and cheaper programs (instead of using the «package» approach they adopt a «quantum» approach, where each piece is sold separately); report a rapid growth of online education programs (customization of time and place of learning); invite experts from outside of their schools, they use network models to be more flexible and adaptable; adopt new business models (freemium, subscription, dynamic pricing, on-demand courses etc.); introduce marketing, educational, communicative innovations into their processes. Schools consider language barrier, normative regulation and lack of new marketing strategies to be the key factors impeding their ability to compete on global markets. In May 2017 Russia adopted a national program to enhance export of education. Russian educational community will be looking for a balance between standardized global requirements and new approaches to innovative customization of educational programs.

**Keywords:** globalization, Russian business education, customization

**JEL Classification:** F60, F23, I25, M16

### 1. Introduction

Globalization encompasses different spheres of economic and social life, including education. This study focuses on globalization effects on the development of business education, specifically further business education. Does the globalization lead to convergence of approaches to education and to unification of programs' content? Do business schools regard this as a problem, and, if they do, how do they solve it? (Nigsch & Schenker-Wicki, 2012) What do consumers demand regarding content of business education, how is the demand formed and what features are crucial for consumers' choice of business education programs?



The importance of internationalization of business education is widely acknowledged. (Trilokekar, 2010) Almost all organizations that provide business education engage in internationalization. Researchers note that internationalization is a way to help students gain the knowledge and skills to operate in a rapidly changing and globalized world. Altbach & Knight state that lately internationalization of curricula has become mainstream for the majority of colleges and universities. (Altbach & Knight, 2007)

## **2. Methodological approaches and research methods**

We should specifically note theoretical approaches of researchers from France and Great Britain, who have compared the dynamics of approaches to business education in these two countries. (Thomas et al., 2014) They note that despite historical differences between systems of business education in these two countries, the last 50 years saw a significant convergence of these systems. The authors list several key factors for such convergence: influence of American model of business education, as well as the schools' intention to be accredited by AACSB (the Association to Advance Collegiate Schools of Business), EFMD (European Foundation for Management Development), EQUIS (European Quality Improvement Standard). Through employing the resource-based view on the firm and institutional theory the authors conclude that achieving international accreditation is no longer a factor of competitive advantage but a necessary pre-requisite for international competition. (Bryant, 2013)

Indeed, accreditation is a way to differentiate from the competitors, as it allows a school to stand out on national and international levels through demonstrating an improvement of curriculum content and strategic planning quality. (Porterfield et al., 2014) However, the market is homogenizing, as more and more schools receive accreditation based on similar standards and best practices, up to the point when accreditation doesn't give a distinctive identity. The intention to receive accreditation inevitably leads to competitive mimicry, which in its turn leads to national business education system losing its unique features. Business schools are becoming more and more alike and institutional isomorphism occurs.

Other researchers believe that since different business schools have different resources, they should employ a more heterogenic approach, because copying competitors will not help outperform them. (Thomas et al., 2014) We can see that the approaches develop in a circular fashion: convergence of business education in Britain and France became a stimulus for their further divergence. The schools' intention to gain competitive advantage forces them to seek and incorporate national, regional and local specific traits and characteristics. The authors suggest that business schools, while still keeping their international accreditations, will pursue original strategies that will enhance their individual identities and value for students.

The possibility of European business schools diverging from American schools relates to a broader question: is there such a thing as "European management"? If so, what unique knowledge should European business schools provide? (Kaplan, 2014) On the one hand, as the author justifiably states, the culture is becoming more global: everybody is watching the same TV shows, communicate in the same global space, listen the same massively open online courses (MOOCs). On the other hand, Europe has around 50 countries where people speak over 60 languages. (Kaplan, 2014) And while the European Union stimulates integration in economy, politics and law, cultural homogenization is not one of the EU's aims. Despite the globalization trend, Europe embraces the idea of cultural and linguistic diversity. The author notes, however, that management styles change with time, and it is possible that a homogeneous management style will emerge all across Europe. Several European initiatives such as the

development of the Bologna process or Erasmus might lead to this emergence. The author offers two arguments against homogeneous European management style: 1) Europeans regard diversity as an advantage, and thus will try to preserve cultural differences, and 2) the fact that Europeans speak different languages, reflects different cultures and impact their behavioral models. Such a view on unique features of European business environment let the author conclude that European business schools should pay specific attention to cross-cultural management and interdependencies between the private and the public sector, offer students opportunities to communicate with different cultures and teach them from an interdisciplinary perspective.

Active discussion exists about specifics of the business environment in developing Asian countries, including their cultural, political and economic distinctions. (Li et al., 2016) As an Australian researcher justifiably claims (Tan, 2017), sectoral specifics lead to further contextualization of management research. In other words, taking into account the specifics of a particular business sector may become an important factor for the divergence of programs and strategies of business schools. In a modern innovative economy business sectors differ in their market structure, economic performance, institutional environment, and technological trajectory. Institutional environment for different sectors can vary because of regulatory actions as well as informal norms. Besides, in emerging economies we see different industries having different pace of moving from central planning to market competition. Differences in institutional environment for various business sectors can also emerge from government policies of fostering growth for certain sectors while suppressing others. (Tan, 2017) As a result, heterogeneity of different sectors remains an important factor influencing management styles, research and education.

Researchers of organizations, which provide services, note that technological advances lead to changes in firms' behavior. They move from standardized to personalized services and from transactional to relational interactions with clients over time. (Huang & Rust, 2017) As this can be also observed in business education, we can suppose that active development of online education, fostered by progress in informational and communicational technologies, is a factor leading to further personalization or customization of business schools' services.

Another factor for business education divergence is the necessity to take into account diverse expectations and experiences of various stakeholder groups. (Beerkens & Udam, 2017) As the authors state, "Stakeholder engagement has become a highly visible issue not only in theory and practice of management, but also in educational policies and education quality assurance process. Business education divergence and development of business schools' identity through incorporating national, regional and local specifics can also be linked to growing connections between business schools and local businesses. These connections are fostered through professors providing advisory and other professional services to businesses, as well as business professionals being involved in education process.

Canadian researchers looked into the involvement of business schools' professors in value-adding activities of commercial companies based on data about 807 specialists from 35 Canadian business schools (Amara et al., 2016). Most of the professors (74%) provide value-adding services and expert advice to companies. These companies are situated mostly within 100 km radius and their activities are connected with the scholars' field of expertise. The authors note that only a minority of professors offer customized solutions and can compete with consulting companies and other specialists in developing strategies. About 40% of the scholars are oriented towards the long-term ties with companies.

Knowledge transfer between education and business is a central public policy issue in most countries. Canadian scientists note that low research budgets are at least one of the reasons that business schools' professors offer a small share of customized solutions to the firms. In the recent years researchers have often noted the ongoing gap between business schools curricula compared to what is actually needed by companies. (David et al., 2011) This problem, typical for many countries, exists in Russia as well. We should note that low level of customization in solutions, offered by business schools' professors can be linked to the low level of customization in the schools' curricula. Business education aimed at global processes and universal management technologies does not completely meet the needs of national business. One of the ways for business schools to take into account national and local business specifics is a trend opposite to knowledge transfer from education into business: involving business practitioners into educational process.

Based on ongoing scientific discussion we have conducted research aimed at evaluating the possibilities and prospects of applying the aforementioned trends to Russian business schools. The research was conducted in Lomonosov Moscow State University, methods of the research included expert interview and polling. In order to look into how this problem is manifested in Russian business education we have conducted expert interviews with top executives of the leading Russian business schools, and also polled the graduates of Lomonosov Moscow State University's MBA program. Opinions of business scholars reflect the supply side of the problem while opinions of the graduates who received the MBA diploma and are working as executives of firms or as entrepreneurs in Russian economy, reflect the demand side.

### 3. Results of research

Top executives of leading Russian business schools and other providers of business education were asked to estimate a share of invited professors and business practitioners in their programs, and forecast that share in year 2020. We wanted to assess the level of personalization of educational content in regard to the practical aspects and specifics of Russian business (Tab.1).

*Table 1: Results of interviewing top executives of Russian providers of business education: estimated share of invited specialists*

Educational organization	What is a share of invited specialists in your educational programs today?	What will a share of invited specialists in your educational programs be in 2020?	Forecast of dynamics
1- Business school *	More than a half	More than a half	=
2-Business school	Approximately half	More than a half	growth
3-Business school	Approximately half	Solely invited specialists	growth
4-Business school	Approximately half	More than a half	growth
5- Business school	More than a half	More than a half	=
6-Business school	More than a half	Less than a half	decline
7-Business school	Less than a half	Less than a half	=
8-Business school	Solely invited specialists	Approximately half	decline
9-Business school	Approximately half	Approximately half	=
10-Business school	Approximately half	Approximately half	=
11-Business school	Approximately half	Approximately half	=
12-Consulting firm	Approximately half	Approximately half	=
13-Consulting firm	Approximately half	Solely invited specialists	growth
14-Corporate university	No invited specialists	Approximately half	growth

15-Corporate university	Approximately half	Approximately half	=
16-Online university	Solely invited specialists	Solely invited specialists	=
17- Provider of MOOCs	Solely invited specialists	Solely invited specialists	=
18- Training center	Approximately half	Approximately half	=
19- Expert organization	Less than a half	More than a half	growth

\* Business school – department of university, etc

As the results of the interview show, almost all business schools invite around half of their teachers from businesses. The sole exception is a corporate university, faculty and experts of which are aware of the situation in the corporation, and teach management and marketing on examples from real-life business practice of this corporation, considering specifics of Russian business environment and management styles. Obviously, this school teaches not only standard programs and universal best practices but instead takes a specific, customized approach to teaching organizational management. In 32% of the cases the interviewees expect the share of invited specialists to grow over time, while in 58% of the cases this share is expected to remain stable (i.e. current level is perceived to be optimal), and only in 10% of the cases top executives of business schools expect this share to fall. We need to note that such response came only from schools where most of or all of the faculty consists of invited specialists. This expectation seems reasonable, because business education implies a combination of theory and practice, as well as learning about international management experience and key global management concepts, which is not a key competence of a practitioner.

We note that most of the schools' executives that were interviewed expect the share of shorter and cheaper programs in their program portfolio to grow. Only 2 of 19 scholars believe longer and more expensive programs to be a key driver for their development. This may mean that Russian business education community will focus on short and targeted programs which usually better reflect the needs of particular consumers, i.e. are more customized.

Another important customization indicator for Russian education is the level of participation of students in drafting the curricula. We asked the scholars to evaluate this level today and to forecast this level for year 2020. Only 1 of 19 executives responded that the students do not participate in designing the program, 12 schools evaluated this level to be minimal, and 6 as significant. 10 out of 19 business schools plan to increase the students' participation by 2020.

One of the ways to personalize education is to consider the students' demands about the time and place of the educational process. Such demands can be met with the help of online technologies. The representatives of the schools estimated the share of online hours in their programs workload to be as follows (Tab.2):

Table 2: Results of interviewing top executives of Russian providers of business education: estimated share of online education in workload

Share of online education in workload	Number of schools, representatives of which estimated the share of online education in their workload as...	
	Current level (2017)	Expected in 2020
No online education	3	1
Less than a half	5	-
Approximately half	8	9
More than a half	1	4
Solely online education	2	5

More than a half of polled Russian business schools use some sort of differentiated/dynamic pricing models (discounts, quotients, etc.) This can also indicate the willingness to consider the

students' needs about the courses organization. We have asked our interviewees a question about innovations: «Innovations in which field does your organization need the most today?» Most of the scholars mentioned innovations in marketing technologies (13 of 19), 5 of the respondents need innovations in models of financing. Innovations in teaching technologies, content of the programs or new fields of knowledge are much less anticipated. In other words, our research revealed that most of the schools strive to identify the consumers' needs and reflect them in their programs. The same conclusion can be derived from the answers to the following question: «What, in your opinion, are the key obstacles for Russian business schools succeeding on global educational market?». The most common answers were: lack of aggressive market strategies; language barriers; inconsistencies of normative frameworks in different countries.

The second research was aimed at identifying key components of demand for further business education as well as criteria of school choice, considering global convergence of managerial knowledge, school divergence, customization with regard to specifics of national economic system, culture and management practices. The poll was conducted throughout 2017. All students and graduates of distant MBA program of the Economic Faculty of Lomonosov Moscow State University (86 people) answered questions about the content of business education, priorities for curriculum, whether they prefer a program leaning towards convergence (program which studies dominating approaches to global business management, following international standards for business education) or towards divergence (program which studies specifics of national environment and Russian business practices); about whether the price corresponded with the quality of education; about the extent to which international educational standards mattered when choosing the program. When answering questions about criteria for choosing an MBA program each respondent chose three most important options about content and format of education. The results are listed in Tab. 3.

Table 3: Poll of MBA students and graduates (86 forms, 2017)

	Question	Yes	No
1	MBA programs should study in the first-place national business specifics, considering sector specifics and particular business specifics (customized approach)	63%	37%
2	MBA programs should take a universal approach to management in global business environment	67%	33%
3	MBA program should comply with a universal international standard	77%	23%
4	MBA programs should consider individual needs of every student and allow for individualization of educational trajectories	57%	43%
5	When choosing an MBA program, an important criterion for me was the PRICE OF THE PROGRAM	17%	83%
6	When choosing an MBA program, an important criterion for me was the REPUTATION OF BUSINESS SCHOOL	90%	10%
7	When choosing an MBA program, an important criterion for me was the FLEXIBLE FORMAT OF EDUCATION	90%	10%
8	When choosing an MBA program, an important criterion for me was the QUALITY OF EDUCATION	100%	-

The results of the survey show that such parameters as «national business specifics, considering sector specifics and particular business specifics» and «universal approach to management in global business environment» have the same value for students: over 60%. 77% of respondents are certain that MBA program should comply with an international standard. This shows that respondents don't see standardization and customization as mutually exclusive parameters, and believe that they should be combined in the same program. MBA students believe that if a program has enough elective courses, customization is achievable and

necessary. More than a half of respondents (57%) believe that «MBA programs should consider individual needs of every student and allow for individualization of educational trajectories». An even more important factor is a possibility to choose a convenient format of education, which can also be seen as a form of customization. 90% of respondents are interested in modern flexible education formats. The answers to the question about key factors influencing the choice of the program show that even although Russian economy went through a crisis in the last three years, the employment, real income and thus the customers' capacity to pay dropped, yet the crucial choice factors were not the price of a program (17%), but the schools' reputation (90%) and quality of education (100%).

#### 4. Discussion

Our research shows that the trends in Russian business education are similar to those observed in European and Asian business schools. (Gerasimenko & Molchanova, 2017; Gerasimenko & Molchanova, 2016) We can agree with an opinion that the necessity for further customization of business education in the context of globalization of multiple innovative economy segments manifests in entrepreneurship education, which is proved, for example, by Finnish researchers. (Forsström-Tuominen et al., 2015) This article argues that a traditional approach to entrepreneurship education when its particular aspects/discourses, such as business, innovation, and lifestyle are studied separately should be forfeited. Experience of providing business education in Lomonosov Moscow State University and our research proves the opinion of European professors: we need to study all these discourses integrally to prepare students for real-life business challenges. (Forsström-Tuominen et al., 2015) Studying interconnections among business, innovation, and lifestyle requires taking into account specific features of a particular environment, i.e. further customization of business education.

#### 5. Conclusion

Business schools around the world are engaged in globalization process, which manifests itself in an effort to attract foreign students. That is true for business schools in Russia as well as in other countries. However, internationalization of education causes certain difficulties and problems. Teaching in groups composed of heavily diverse students has many advantages. However, it can lead to problems and challenges, including those stemming from cultural differences which cause various expectations from education, as well as different performance. An analysis of the experience of teaching students from Asia conducted by Rotterdam Business School revealed significant differences in learning styles, ways to self-identify strength and weakness, and expectations from Western education. (De Rijke, 2011) These problems are unavoidable in globalizing business education. They should become a subject of further research by business schools in Russia and in other countries.

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