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EFFECTIVENESS OF THE MONETARY POLICY IMPLEMENTATION IN THE CONTEXT OF CRISIS: USE OF SHORT-TERM INTEREST RATE IN THE CZECH REPUBLIC AND THE EMU

Ľudmila Bartóková, Júlia Ďurčová

Introduction

The recent economic crisis and the events that followed, namely the debt crisis, pointed to a number of issues of European Economic and monetary union (EMU), such as particularly persistent asymmetries and differences in development. Due to the high interconnectedness of member countries' economies, it is no longer possible to perceive the problems of one country as isolated, since the negative effects are spread throughout the EMU. For this very reason, economists are starting once again various discussions about the advantages and the possibilities of national monetary policy in influencing macroeconomic developments or in diminishing the negative impact of the crisis.

The Czech Republic, as a candidate country for the Euro adoption, is still able to use its own monetary policy. There are, of course, different views on whether a monetary policy of small and highly open economies of the EU can be described as a separate and independent from the overall development of the EMU, and then to what extent. On the other hand, it is a well-known fact that even a setting of a common monetary policy may not be currently satisfactory to all member states. Today, when most countries are characterised by a high degree of openness, the process of monetary transmission operates faster. [20], [34] The evaluation of this process and its effectiveness in influencing macroeconomic development is possible by examining the operations of monetary policy via selected transmission channels. All of these factors led to our interest in this particular topic.

The paper is focused on the analysis of the transmission processes of monetary policy in the EMU and in one of the accession candidate countries, the Czech Republic. The analysis was focused on the evaluation of the similarity in responses to monetary policy shocks in both the EMU and the Czech Republic. Closer attention was paid to the influence of the short-term interest rate transmission channel on the price level, the nominal effective exchange rate and the gross domestic product. The effects of interest rate shocks on selected variables were identified by estimating a VAR model. This analysis allows to determine the impulse-response functions that are used to estimate the impacts of interest rate on selected macroeconomic variables. The impacts of shocks were observed for the EMU and the Czech Republic, and the results were compared for the two periods. The aim of this paper is to evaluate the extent of similarity of monetary transmission process via the interest rate transmission channel in case of the EMU and the Czech Republic, taking into account the crisis period.

1. Overview of the Literature

During the last decade many important changes occurred in the monetary policy strategies as well as in the monetary policy instruments. This can be seen in the case of traditional transmission channels of monetary policy and their effectiveness, which have varied due to a number of structural changes in the economies as well as due to changing expectations of economic subjects. [29] Nowadays, most central banks use key interest rates in the implementation of their monetary policies.

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This way, they are able to influence inflation expectations of different market subjects and direct them towards desired level of inflation, thereby maintaining the fundamental objective of the scheme based on price stability, such as inflation-targeting regime. [15] However, persisting problems of low economic growth and stagnant economies also forced the ECB and the Czech National Bank (CNB) to use less conventional monetary policy measures. In the case of the Czech Republic, CNB chose to use a heavily expansionary monetary policy oriented on the weakening of the exchange rate in order to stimulate the export performance of the country. The ECB decided to use the instrument of quantitative easing.

Despite general agreement on the significant impact of monetary policy on the real economy, the latest global economic crisis has spurred further the debates on the various mechanisms, transmission channels and time delays. It may also be related to the crisis's extent, due to which, many authors refer to it more as a system one (multifactorial) rather than a cyclic one. [22], [24], [26] Studies on a single monetary policy of the EMU countries suggest that the impact of monetary policy on the real economy in the EMU depends on a number of external factors (economic structure, competitiveness, presence of various shocks, etc.). [29] Impacts of the financial crisis on the transmission mechanism re analysed, for example in the Report on Financial Stability published by the International Monetary Fund [23]. The report compares the operation through the interest rate channel and the effectiveness in influencing short-term and long-term interest rates in the case of the EMU and the USA. According to the Report, the financial crisis marked the transmission from key interest rates to long-term interest rates in the EMU as well as in the US. Badarau, Levieuge [5] analysed in their work the role played by financial heterogeneity of countries in a monetary union and its consequences for the business cycle. The authors showed that the common monetary policy has contributed to the deterioration of cyclical differences of union's countries compared to the situation if these countries were hit with shocks and still had their independent monetary policies. It is therefore necessary to take into account the national characteristics of individual Member States when deciding on changes in the monetary policy, in particular with respect to future possible expansion of the Union. [11], [27] Many of the current works are focused on these EU countries and their monetary transmission in the transformation process. [9] For example Lyziak [28] and Demchuk [14] tested, using VAR method, impacts of the crisis on the effectiveness of monetary policy transmission in the case of Poland. One of the most important findings was that the traditional interest rate channel was the most affected by the crisis. Models of vector autoregression (VAR or VEC) are often used in the analysis of monetary transmission mechanism. A standard VAR approach assumes that the dynamics of the economy can be expressed as a set of macroeconomic variables. Some authors have criticised this approach, arguing that the functioning of the real economy and economic processes cannot be measured by any observable macroeconomic indicators. Despite the critics, these models remain one of the most widely used in modelling of monetary transmission processes. It is because VAR models enable to study and compare the effects of monetary shocks on selected variables in each country. Although monetary conditions as well as transmission processes may be different for various economies, many authors suggest that these differences were not that significant in the 90s. [8], [19] Methods used by these authors were based on different assumptions; nevertheless, they had reached similar results. They showed that the reaction of product to a shock in interest rates was not the same in all EU countries. However, differences in the transmission of monetary policy between countries (such as Germany, France and the United Kingdom) were not too prominent [23]. Angeloni et al. [1] confirmed by using a VAR method that the interest rate channel in the EMU was at that time the most important out of the three monetary policy channels (interest rate channel, asset price channel and credit channel) in the transmission of monetary policy. Their results also showed that the impact of monetary policy on the overall product and the overall price level is the same in the euro area as well as for each of the member countries. The reaction of the product on the unexpected increase in short-term interest rate is only temporary and the prices' response is delayed by four quarters. Jiménez-Rodríguez Morales-Zumaquero and Balázs [25], also Eger, Crespo-Cuaresma and Reininger [18]

used also a method based on a VAR approach when analysing interest rate, commodity and supply-shocks for ten countries of the Central and Eastern Europe. According to their findings, the responses to the shocks were expressed differently in various countries what they explained by differences in the development and the settings of monetary policies. The transmission mechanism in the case of the Czech Republic in the period 1994–2004 was analysed for example by Arnoštová and Hurník [2]. By using a VAR approach the authors found that unexpected monetary tightening leads to a decrease in product because prices remain inflexible for some time and begin to decline only after about two quarters. The exchange rate, however, reacts by an immediate appreciation. A longer period, covering the crisis, (until 2012) was analysed in the paper by Babecká Kucharčuková et al. [4], where it was confirmed that the transmission via the interest rate transmission channel has been weakened in the years immediately after the crisis.

A VAR model was also used to examine monetary policy actions with regards to the effectiveness of inflation targeting monetary strategy. The causes of deviations of inflation from the CNB targets during the first ten years of the inflation targeting (the period 1998–2007) were studied, again using a VAR model, by Holub. [21] Based on his findings, he concludes that in the short term the shocks in the prices of agricultural producers have been the most important factor of deviations from inflation target. However, in the medium term, the development of the real exchange rate gap clearly became the most important factor. The impact of real interest rates appeared as statistically significant only in the shorter period of 2–3 quarters. Similar conclusions can be found in the analysis of Bisová [10], who observed a stronger and more stable effect of the exchange rate channel on the final target (inflation target) of CNB's monetary policy than in the case of interest rate channel. Other analyses also showed that due to the effects of the crisis it is no longer possible to fully rely on Taylor-type monetary rules. [33] The effectiveness of short-term interest rates becomes problematic especially in times of crisis when the rates may be reduced close to zero levels. As a result, the transmission of the actual macro-economic variables proved to be relatively weak. Many authors suggest that the use of short-term interest rates under fixed monetary rule may be less effective than its management under inflation targeting. They especially highlight the benefits of inflation targeting as a monetary strategy for transparency and greater long-term focus in the common everyday decision-making. [30] Yet, the examination of monetary rules and interest rate transmission mechanism in case of the catching-up countries came to focus relatively recently. However, the authors emphasize that despite the use of inflation targeting, central banks still monitor the evolution of exchange rates. [3], [35]

Economic theory generally assumes that monetary tightening will be followed by a decline of the product and the price level, and shortly thereafter, by the appreciation of the exchange rate. However, some analyses showed that it is also possible to expect the opposite behaviour of the prices and the exchange rate. The reaction of the exchange rate may depend on the monetary regime. The unusual behaviour of exchange rates can also be caused by changes in the exchange rates regime or by currency crises when monetary tightening may lead to an immediate depreciation of the exchange rate instead of an appreciation. This atypical reaction is usually referred to as the "exchange rate puzzle". [2] As for the behaviour of prices, atypical reaction occurs quite often and it is described in a series of works dedicated to the analysis of the impact of monetary policy changes on the price level. Castelnuovo and Surico [12] state that this anomaly was "observed" and labelled as the "price puzzle" firstly by Sims and Eichenbaum. Studies offer several explanations for this problem. One of them is the misidentification of monetary shocks associated with a weak reaction of the interest rate to a given inflation. In other words, what is considered to be a monetary policy shock is in fact a combination of an actual shock and endogenous responses of the monetary policy. [7]

In the following analysis, we therefore tried to apply a vector autoregression model for both the Czech Republic and the EMU to observe and compare the transmission through interest rate transmission channel. We have chosen the GDP, the consumer price index and the exchange rate as basic variables for the model, i.e. variables that central banks typically use when applying their monetary rules.

2. Econometric Model – Quantification of the Relationships between Variables

To verify the existence of relationships between variables, we used a VAR model (Vector autoregression model). This model is often used when examining the effects of monetary policy and the effectiveness of its transmission channels as it equally allows comparing the results obtained for the different countries. A VAR model is usually used to observe the impacts of changes in monetary policy (tightening/easing) on macroeconomic variables such as the product, the price level, etc.

We selected the following variables in order to analyse the interest rate transmission channel: national nominal short-term interest rate (money market 3-month interest rate), gross domestic product at constant prices, nominal effective exchange rate and consumer price index. Similar variables were used e.g. by Arnoštová and Hurník [2], Bisová [10], Holub [21] in their analyses of monetary policy effects.

Unlike some authors in their models ([1], [2], [4]), we decided to omit the monetary aggregates. Many authors have shown that the inclusion respectively omission of these variables in the model will not affect the effects of short-term interest rate shock on the product and prices (e.g. [31]), since the tested shock of monetary tightening is usually followed by a decrease in the money supply.

Based on the theoretical findings on the interest rate transmission mechanism and when neglecting mutual interactions among transmission channels, the relationships between variables can be simply described as follows: a sudden monetary tightening in the form of an increase in the key interest rate is transmitted to short-term interest rates and also to evolution of exchange rate. Consequently, this will influence the activities of economic subjects and should result in declines of the product and the price level after some time.

Our model is based on the following equations:

$$CY_t = A(L)Y_{t-1}+u_t \qquad (1)$$

where $Y_t = [i_{rt}, e_{rt}, y_t, p_t]$ is a *n x 1* vector of endogenous non-stationary macroeconomic variables, the i_{rt} is an interest rate, e_{rt} is a nominal effective exchange rate (NEER), y_t is a gross domestic product (GDP), p_t represents a consumer price index (CPI) and μ is the vector of constants. C is the $N \times N$ matrix containing all the coefficients describing the current relations between endogenous variables of the model, and (L) is an $N \times N$ polynomial variance-covariance matrix, and u_t represents the normalized vector of exogenous shocks that reflects unexplained changes in the development of the endogenous variables in the form of *n x 1*. Selected ordering of the variables in the vector of endogenous variables takes into account the sequence of transmission of monetary policy from short-term interest rates to other variables.

The reduced form of a VAR model is obtained by multiplying the equation (1) by inverse matrix C^{-1}. This operation is necessary because the model represented by equation (1) is not directly observable and structural shocks could not be identified properly. A VAR model described by equation (1) can be modified as follows:

$$Y_t = C^{-1} A(L)Y_{t-1}+C^{-1}u_t = B(L)Y_{t-1} + e_t \qquad (2)$$

where

$$B = C^{-1}A \qquad (3)$$

$$e_t = C^{-1}u_t \qquad (4)$$

$B(L)$ is a matrix that expresses relation between variables on lagged values and e_t represents an $N \times 1$ vector of serially uncorrelated errors of the model.

We estimated and compared two VAR models in order to verify the correctness and accuracy of the results. Both models take into account the constraints arising from the recursive Cholesky decomposition of the residuals. The resulting effects of unexpected shocks on studied endogenous variables are represented by a function of IRF – impulse – response function.

However, it is necessary to test the variables for the stationarity of the time series, as well as for the existence of a long-term equilibrium before the applying the model. It is also necessary to check the model for the autocorrelation, the residual heteroscedasticity and the normality. The next part of the paper presents only selected test results. Other results are available from the authors upon request.

3. Data and Results

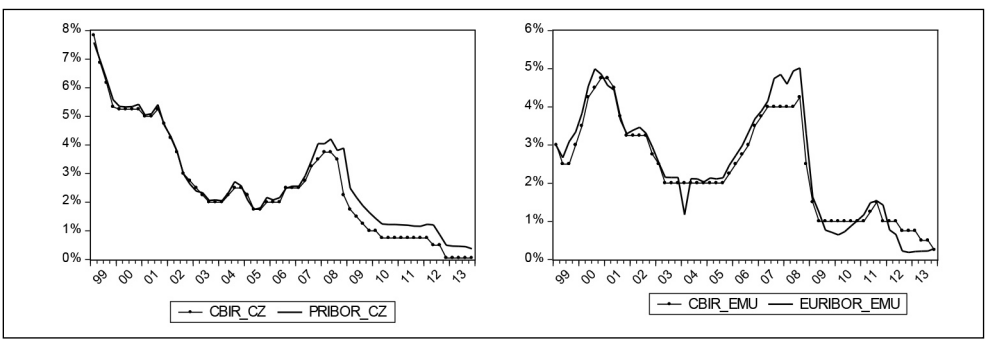
The model was estimated for two different time periods. A shorter one corresponds to the period from the first quarter of 1999 to the last quarter of 2008 (1999Q1–2008Q4), a longer covers the years 1999 to 2013 (1999Q1–2013Q3), including the global economic and the debt crises and the events that followed. The use of the same method for periods of various lengths enabled to analyse the impact of aforementioned crises on transmission processes of the monetary policy, namely the effects on product, prices and exchange rate. In our model, we assumed that the crisis negatively affected macroeconomic evolution and disrupted the transmission process of monetary measures to the real macroeconomic variables. As a result, the consequences of monetary tightening were transmitted to the observed variables only partially or with significant delay (as shown for different countries e.g. in [4], [14], [23], [28].

Data used in this analysis were obtained from the databases of the European Central Bank (ECB) [17], the Bank for International Settlements (Bank for International Settlements, BIS) [6], the Eurostat [16], and the Czech National Bank [13]. The model used quarterly data from the years 1999–2013 (60 observations) for the following variables: gross domestic product, the nominal effective exchange rate, price level and short-term interest rates. The analysis was focused on the comparison of indicators in the EMU and the Czech Republic. In the case of GDP time series data were seasonally adjusted in order to eliminate seasonal factors.

3.1 Evolution of Endogenous Variables

When constructing the model, we assumed that monetary policy decisions of the central bank and changes of its key interest rates are transmitted to the interest rates on the money market. This suggests that changes in setting of 2-week interest rate for the main refinancing operations are later closely copied by the development of 3-month EURIBOR (Fig. 1). In other words, the evolution of the EURIBOR reflects the changing stance of the ECB. Similarly, in the Czech Republic, changes in the base interest rate, namely 2-week repo rate can be also monitored through the evolution of the PRIBOR, a money market interest rate (Fig. 1). The central bank's key interest rate and the money market interest rate present in both cases a high degree of correlation; thus money market interest rates can be used for estimating changes in monetary policy stance. The same approach (i.e. replacing the 2-week interest rate by 3-month money market interest rate) was used for example by Arnoštová and Hurník [2], also by Babecká Kucharčuková et al. [4].

Fig. 1: Interest rates (%)

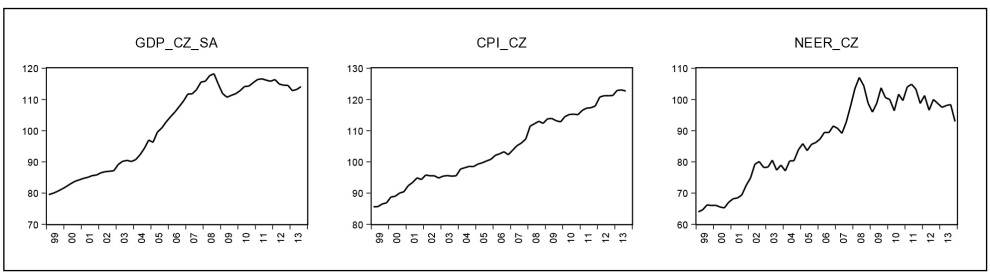


Source: own calculations, ECB [17], CNB [13]

The evolution of endogenous variables in the Czech Republic within the observed period of 1999–2013 was characterised by a considerable volatility (Fig. 2). The reference period can be divided into two basic periods, namely the period of 1999–2008

and 2008–2013. Up until 2008, there was an apparent long-term growth trend in the GDP accompanied by a strengthening of the nominal effective exchange rate. During this time, macroeconomic situation improved and created conditions for economic growth based on relatively stable economic environment and the positive impact of structural changes. All of this prevented the widening of external imbalances. Increasing performance of the Czech economy positively influenced the final stages of economic transformation, European integration processes, stable monetary environment and a significant inflow of foreign capital. Inflows of capital, together with a high dynamics of economic growth contributed to an appreciation of the nominal effective exchange rate but it did not affect negatively country's foreign competitiveness. The evolution of inflation in the 1990s can be considered relatively volatile until 1999 when it was stabilised. The implementation of the CNB's inflation targets during the first ten years of this strategy was marked by two cases of a significant undershooting of the target in 1998–1999 and 2002–2003. Many economists linked this development to the evolution of the Czech Crown's exchange rate (e.g. [2], [21]). Another significant deviation was observed in 2006–2007. After 2007, a strong growth in consumer prices appeared and it was mainly pushed upwards by the world prices of energy resources as well as by the implementation of selected reform measures in early 2008. Afterwards, the economic crisis started to affect the overall economic situation. In the second half of 2008 there was a slowdown in economic growth, a decline in inflation and a rising unemployment. The appreciation of the nominal effective exchange rate has slowed down and then the exchange rate depreciated significantly; what has contributed to improving the balance of payments' current account. The positive impact of economic stagnation was reflected in the evolution of inflation which has not exceeded 2% level since 2010.

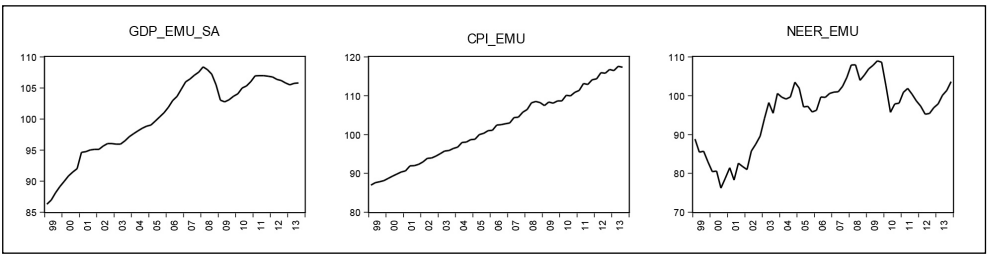
Fig. 2: **Evolution of GDP (index, 2005=100), index of consumer prices (index), NEER (index) – CZ**



Source: own calculations, Eurostat [16]

Evolution of the observed endogenous variables for the whole EMU showed a similar trend as the evolution of endogenous variables in the Czech Republic (Fig. 3). As for the evolution of the EMU's GDP, it indicated an increasing trend until 2007, interrupted only by the impact of the global economic crisis in 2008. Some EMU countries even suffered a decline in the GDP compared to 2007. After 2008, the GDP growth trend slowly recovered, although 2012 brought again a more pronounced slowdown as a reaction on the situation prevailing in the EMU at the time. Similarly to GDP, inflation was rather stable until 2007; afterwards its evolution became more volatile. The nominal effective exchange rate of the EMU was marked with a general trend of a gradual strengthening, interrupted only by shorter temporary periods of NEER's depreciation. The most significant weakening of the NEER can be observed in the years affected by the global crisis.

Fig. 3: **Evolution of GDP (index, 2005=100), index of consumer prices (index), NEER (index)**



Source: own calculations, Eurostat [16]

3.2 Tests – The Verification of the Basic Assumptions of the Model

Before using data for econometric modelling, it is necessary to examine their stationarity that was verified through unit roots testing. We used Dickey-Fuller test (Augmented Dickey-Fuller test, ADF) and Phillips-Perron test (Phillips-Perron test, PP). Both tests verify the null hypothesis of the existence of a unit root. If the hypothesis were confirmed, it would mean that the time series are non-stationary. Observed time series were mostly non-stationary at values, therefore it was necessary to test them for the stationarity also at their first differences. Here, the stationarity was confirmed and the null hypothesis of the unit root presence was rejected (Tab. 1).

Tab. 1: **The results of unit root tests (1999Q1–2013Q4)**

Czech Republic	PRIBOR ADF	PRIBOR PP	GDP ADF	GDP PP	NEER ADF	NEER PP	CPI ADF	CPI PP
values	-1.995	-2.429	-1.457	-1.452	-1.727	-1.827	-0.143	-0.357
1st diff.	-5.086*	-5.086*	-4.781*	-4.836*	-7.298*	-7.288*	-2.76***	-7.595*
EMU	**EURIBOR ADF**	**EURIBOR PP**	**GDP ADF**	**GDP PP**	**NEER ADF**	**NEER PP**	**CPI ADF**	**CPI PP**
values	-1.573	-1.379	-2.327	-2.577	-1.116	-1.256	-0.167**	-0.188**
1st diff.	-4.893*	-4.950*	-3.860*	-3.839*	-6.885*	-6.896*	-4.199*	-11.94*

Note: Data represent result of t-statistics. Null hypothesis cannot be rejected at 1% significance level (*), at 5% significance level (**), at 10% significance level (***).

Source: own calculations

When testing time series, it is also necessary to determine whether observations are not mutually correlated. The presence of the residual autocorrelation was checked by using LM test as well as the corellogram, which confirmed that the residuals can be regarded as mutually uncorrelated. Jarque-Berra test was used to test the normality of residuals. Based on the test results, it can be concluded that the residuals are from the normal distribution.

Testing for the cointegration verifies the existence of stable long-term relations between endogenous variables of the model. For this purpose, Johansen test was used with a number of delays equal to 5 (determined according to AIC, LR and FPE information criteria) for both the EMU and the Czech Republic. The results of both test statistics (trace test and maximum eigenvalue statistics) did not confirm the presence of cointegrating equation (Tab. 2) and thus a VAR approach can be applied.

Tab. 2: The results of cointegration tests (1999Q1–2013Q4)

Czech Republic				
equations	**Trace Stat.**	**0.05 critical value**	**Max Eigenvalue**	**0.05 critical value**
none*	20.13204	29.79707	13.88818	21.13162
at most 1	6.243856	15.49471	3.760787	14.26480
EMU				
equations	**Trace Stat.**	**0.05 critical value**	**Max Eigenvalue**	**0.05 critical value**
none*	25.85441	29.79707	19.00112	21.13162
at most 1	6.853290	15.49471	6.849003	14.26460

Source: own calculations

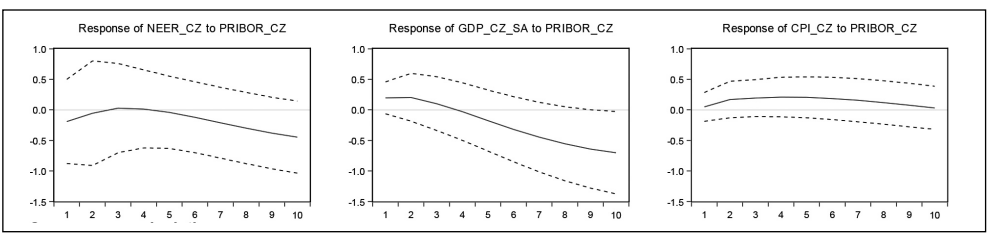
The stability of the selected model was evaluated and confirmed through AR Root Test. Based on all results (unit root test and cointegration) a VAR model was estimated. Subsequently, this model allowed deduction of impulse-response functions as well as the variance decomposition for both the EMU and the Czech Republic.

3.3 Discussion of Results

The estimated VAR model allows to deduce the impulse-response functions (IRF) for each of the endogenous variables. We focused only on the observations of variables' responses to changes in interest rate PRIBOR for the Czech Republic and EURIBOR for the EMU. We considered a one-time positive interest rate shock which represents a monetary tightening. Based on the theory, it can be expected that a monetary tightening (increase in short-term interest rate) will be followed by a decrease in total product, the price level, and the appreciation of the exchange rate (increase of exchange rate) shortly thereafter.

The graphs for the years 1999–2013 (Fig. 4) show as expected, the decrease of the product. However, the product did not respond immediately but with a delay of approximately three quarters. NEER responded by deterioration in the short term, what may be related to the higher volatility of bilateral exchange rates of the Czech Crown against foreign currencies since 2008. Similarly, the price level did not react as anticipated. Its response was a very mild and delayed by approximately two quarters.

Fig. 4: % Reactions of GDP, CPI and NEER to 1% change of PRIBOR (1999Q1–2013Q4)

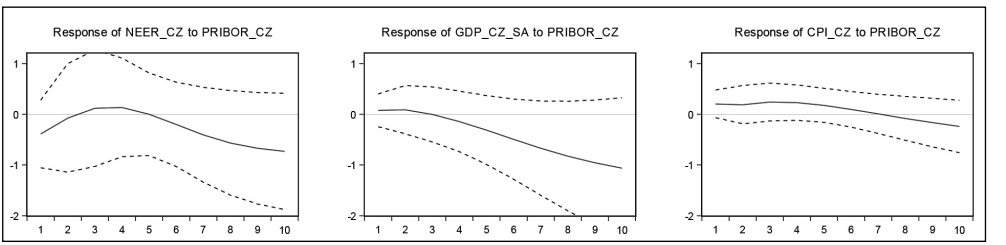


Source: own calculations

In the shorter period when crisis still did not affect the macroeconomic situation, the endogenous variables' responses to sudden interest rate shock were much closer to theoretical expectations (Fig. 5) for the first two variables. The product reacts similarly as in the longer period, i.e. by a decrease with time lag of three quarters. The NEER's reaction leads towards a very modest and short-term recovery but only after two quarters. The price level equally does not respond as expected, to the shock in the short-term interest rates.

Based on these findings, it could be said that the impact of interest rate shock on the variables studied over a longer period 1999–2013 (with the impact of the crisis) was different from the development in a shorter period (with no crisis) only to a small extent. Initial suppositions based on theoretical assumptions were fulfilled in a shorter period of 1999–2008 for the NEER and the GDP. The reaction of the price level was in neither of the cases in accordance with the expected evolution. We cannot therefore definitively state that the transmission from monetary policy measures to the real macroeconomic variables was significantly disturbed by the crisis.

Fig. 5: % Reactions of GDP, CPI and NEER to 1% change of PRIBOR (1999Q1–2008Q4)



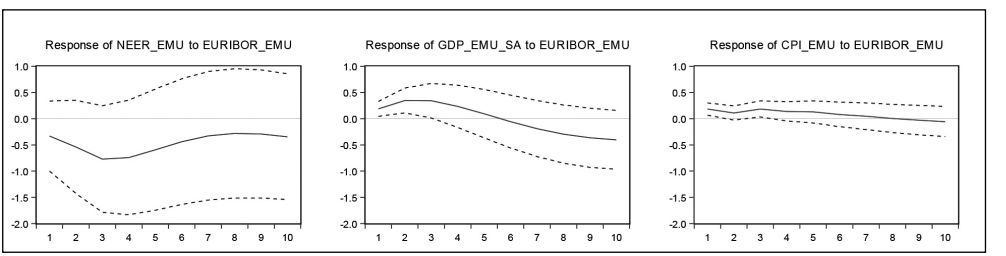
Source: own calculations

The evolution of IRF functions for the EMU in the period of 1999–2013 is shown by Fig. 6. The responses of the GDP and the price level were contrary to initial expectations. The product starts to decline with a more significant delay of five quarters. The nominal effective exchange rate reacts by a depreciation, as in the case of the Czech Republic. These results may be explained by the composition of NEER which takes into account transactional elements (effect on real output) and trade relations of the country to a greater extent than just the effects of short-term interest rates. The heterogeneity of the EMU can also play a certain role as it caused that the macroeconomic effects of the crisis for various countries differed.

The reactions of endogenous variables in a shorter period of 1999–2008 (Fig. 7) are very similar to the reactions over a longer period. Evolution of IRF functions for GDP and CPI is almost identical. In case of NEER, a depreciation of the exchange rate can be observed over the first four quarters

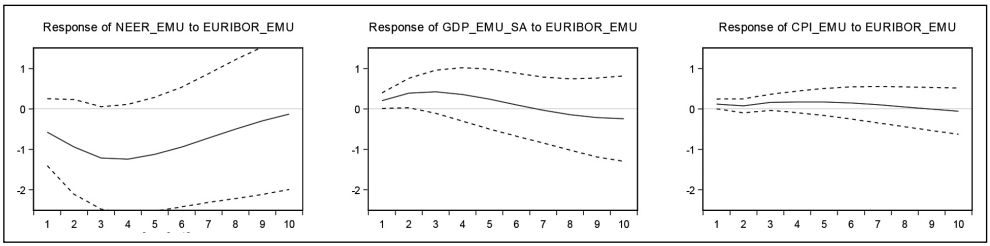
The comparison of the reactions studied for longer and shorter periods show in neither of the cases a significant distortion of transmission of monetary measures to the real macroeconomic variables due to the crisis.

Fig. 6: % Reactions of GDP, CPI and NEER to 1% change of EURIBOR (1999Q1–2013Q4)



Source: own calculations

Fig. 7: % Reaction of GDP, CPI and NEER to 1% change of EURIBOR (1999Q1–2008Q4)



Source: own calculations

Comparison of the reactions of variables 1999–2013 in the Czech Republic and in the EMU suggests that the effects of positive interest rate shock are very similar for the product and the price level. Within a shortened pre-crisis period of 1999–2008 a different reactions can be observed for the nominal effective exchange rate; Czech Republic`s NEER is closer to the anticipated response. Yet, it cannot be confirmed definitively that the crisis disrupted the transmission process from monetary measures to the real macroeconomic variables neither for the Czech Republic nor in the case of the EMU. Another important issue is a fact that the effectiveness of the short-term interest rate in affecting the price level has proved to be relatively weak. Based on these findings we can conclude that in the both observed cases the effect of exchange rate puzzle and the price puzzle appeared, as described, for example by Arnoštová and Hurník [2], Balke and Emery [7] or Castelnuovo and Surico [12].

3.4 The Results of Variance Decomposition of Endogenous Variables

Based on the estimated model it was possible to continue with the variance decomposition of the endogenous variables. Tab. 3 shows the contributions of the changing interest rate PRIBOR to the variability of the GDP, the price level and the nominal effective exchange rate for the Czech Republic over the period 1999–2013. It can be concluded that the change of PRIBOR has a significant impact on the variability of the GDP (15.5%) but only with a time delay. The reaction is weaker for the price level (9.23%). Similarly, in the case of the nominal effective exchange rate the effect of changes in interest rates has a weaker momentum and accelerates with a time delay (7.23%). In percentage terms, the effects of the PRIBOR can be described as "the strongest" for the GDP. It can therefore be concluded that the responses of variables on the unexpected increase in short-term interest rates are weak and delayed.

Based on the variance decomposition of the endogenous variables in the EMU for the period of 1999–2013 we can say that the contribution of changes in EURIBOR to the GDP's variability in the whole EMU was significant, especially at the beginning of the period but with the lag of two quarters (17.18%). This contribution was weakening with the increasing time interval. The interest rate shock also had a fast impact on the price level when its effect increased significantly during the first three quarters (18.33%). For NEER the greater impact of interest rate shock started to show only with the delay of four quarters and peaked after six quarters (9.58%). (Tab. 3)

The decomposition of variance calculated for the period of 1999–2013, showed in case of the EMU statistically significant contributions of interest rate changes to the variability of all studied endogenous variables but with different time shifts.

Tab. 3: Variance decomposition of endogenous variables (1999Q1–2013Q4)

Czech Republic				EMU			
Period	GDP_ CZ_SA	CPI_CZ	NEER_ CZ	**Period**	GDP_ EMU_SA	CPI_EMU	NEER_ EMU
1	0.609505	5.690250	3.529536	**1**	11.23519	15.60565	1.732183
2	0.703338	6.031570	1.532985	**2**	17.18430	15.72192	3.378863
3	0.424459	7.504819	1.180926	**3**	16.97604	18.33384	6.345194
4	0.720938	8.770392	1.162716	**4**	14.35716	17.57779	8.435717
5	1.993569	9.231845	1.120073	**5**	11.72825	16.46137	9.390236
6	4.265255	8.962689	1.313075	**6**	10.08913	14.66306	9.587176
7	7.120639	8.320081	2.145866	**7**	9.895306	12.94677	9.401672
8	10.10931	7.795855	3.649641	**8**	11.04064	11.50375	9.089625
9	12.93624	7.679011	5.497954	**9**	13.07762	10.44981	8.809713
10	15.51228	8.063177	7.324786	**10**	15.49464	9.794460	8.673513

Note: Cholesky ordering for the Czech Republic: PRIBOR_CZ NEER_CZ GDP_CZ_SA CPI_CZ; Cholesky ordering for the EMU: EURIBOR_EMU NEER_EMU GDP_EMU_SA CPI_EMU

Source: own calculations

When comparing the results of the variance decomposition for the Czech Republic we can observe the lower contributions of changes in interest rate to variability of variables. The interest rate channel did not revealed, particularly in case of the Czech Republic; a strong and stable effect on the observed variables. Similar findings can be found in the analysis of Holub [21] who states that the impact of interest rates on the deviations in inflation was close to statistical significance, with the exchange rate being the most important factor. Bisová [10] also confirms a stronger and more stable position of the exchange rate channel within the transmission mechanism in the Czech Republic in comparison with the interest rate channel.

Conclusion

The recent global crisis has renewed interest in studying the transmission mechanism of monetary policy. Many authors noticed that the crisis affected mostly the traditional interest rate channel. The crisis has also renewed debates of the joining the EMU and the advantages of single monetary policy as a tool for the macro-economic regulation and mitigation of shocks. Unfavourable developments after 2008 still verify the ability of monetary policy to mitigate negative impacts. This can be seen in the context of common monetary policy effects and deepening asymmetries between member countries. It is possible to evaluate the success of a single monetary policy of small and open, non-member country in influencing macroeconomic situation. From the point of view of the central authorities of these countries, e.g. the Czech Republic, it seems therefore important to preserve an independent monetary policy.

Our analysis was focused on monitoring the operation of monetary policy through interest rate transmission channel with the use of the basic variables: GDP, price level and exchange rate, i.e. the variables that central banks typically use within their monetary rules. The aim of the analysis was to verify the similarity of the monetary transmission process through this channel in case of EMU and the Czech Republic. We supposed that the negative evolution related to the crisis can disrupt the transmission of monetary policy measures to macroeconomic variables, therefore the impacts of monetary policy changes are transmitted to the observed economic variables only partially or with significant lags.

The estimations were made using a Vector Autoregression – a VAR model, which is often used to evaluate the effects of monetary policy and effectiveness of transmission channels. It also allows comparing the results obtained for the different countries. The model was estimated for two different time periods: shorter 1999–2008 and longer 1999–2013, including the economic crisis and the development that followed. The same method used for different periods enabled to analyse the impact of the crisis on the monetary policy transmission process, namely the impact on product, prices and exchange rates. Based on the observed results it can be concluded that the product and price level responses to the positive interest rate shock in the EMU and in the Czech Republic are very similar within entire period 1999–2013. In the shortened, pre-crisis period 1999–2008 a different reaction of the nominal effective exchange rate could be observed, which in the case of the Czech Republic is closer to the expected response. It cannot be clearly stated that the crisis disrupted the transmission process of monetary measures to the real macroeconomic variables neither in the Czech Republic nor in the EMU. The interest rate channel has not confirmed strong and stable effect on the observed variables.

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Abstract

EFFECTIVENESS OF THE MONETARY POLICY IMPLEMENTATION IN THE CONTEXT OF CRISIS: USE OF SHORT-TERM INTEREST RATE IN THE CZECH REPUBLIC AND EMU

Ľudmila Bartóková, Júlia Ďurčová

Focus on monetary policy transmission mechanism has regained its importance especially in regards to financial and debt crisis. Negative developments after 2008 still verify the ability of monetary policy to mitigate its impacts. In EMU, it can be seen in the case of the effects of single monetary policy and the deepening of the asymmetries between member countries. This can be compared to the case of the monetary policy efficiency in small and open non-member country and its influence on macroeconomic developments.

This paper is focused on the analysis of transmission process of monetary policy through the interest rate channel in EMU as well as in a non-member country, namely in Czech Republic. The aim of the analysis was to verify the similarity of reaction in case of monetary policy shock. The results for Czech Republic were compared to results for overall EMU. The focus was predominantly on interest rate channel of monetary transmission process and its impact on inflation, nominal effective exchange rate and gross domestic product, the variables that are typically used in central banks' monetary rules. We also assumed that negative developments related to the crisis can distort the transmission of monetary policy effects on macroeconomic variables and that the impact of monetary policy changes is transmitted to the economic variables only partially or significantly lagged. The effects of interest rate shocks on selected variables were identified by estimating VAR model that uses Cholesky decomposition of innovations; the most widely used empirical methodology for analysing the transmission mechanism of monetary policy. The results show that the reactions of the product and the price level to positive interest rate shock are very similar for Czech Republic as well as for EMU throughout the investigated period 1999–2013. However, we cannot definitively affirm that the crisis disrupted the transmission process from monetary measures to analysed macroeconomic variables as shown in the cases of Czech Republic and EMU. Interest rate channel has not shown particularly strong and stable influence on the observed variables neither for Czech Republic, nor for EMU.

Key Words: *Interest rate channel, monetary policy shock, EMU, Czech Republic, economic crisis, VAR model.*

JEL Classification: *E43, E52, C32.*

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DETERMINANTS OF THE EUROPEAN UNION'S TRADE – EVIDENCE FROM A PANEL ESTIMATION OF THE GRAVITY MODEL

Michał Bernard Pietrzak, Justyna Łapińska

Introduction

In the world's economy the last two decades have been a period of development of regional integration groups. A number of new groups came into being and the already existing ones followed the path of deepening the integration process. The basis of the process is formed by the expectations that integration allows production volume and exports to be increased, and economic resources to be allocated more effectively. According to the integration theory, foreign trade is the area in which the impact of regional integration on a country's economy is most visible and clear. The positive effects in trade evoked by such processes have been noted by abundant empirical research [28], [26], [17], [16], [10].

The intensification of liberalisation processes in trade within regional integration groups results from the lack of satisfactory progress in multilateral commercial negotiations conducted during subsequent GATT/WTO meetings. It is estimated that at present more than a half of international trade occurs within various regional integration groups. Most frequently such groups are composed of countries that share a similar geographical location.

It has been only a few years since the expansion of the European Union. Although this period is relatively short for making an objective assessment of the course of economic processes, we can already observe certain changes and new developmental trends both in individual economies as well as in the whole group. Since the accession of the new EU members, its trade volume has increased. An analysis of the current statistical data clearly shows this. However, a simple indicators analysis shows only changes over time but it neglects the causes of these changes. With a view to learning the causes, the present paper proposes applying a gravity model for the purpose of evaluating the impact of selected factors, mainly economic ones, on the development of bilateral trade in the EU states in the years 1999–2010.

The research applied the gravity model of trade for panel data. GDP *per capita,* foreign direct investment *per capita*, and distances between countries were taken as potential determinants. Moreover, we considered the impact of EU membership on the increase in trade volume in both the 15 EU states and the 12 new member states.

1. Gravity Models of Trade – Subject Literature

For the first time the gravity model was applied in an analysis of international flows of commodities in the nineteen sixties by a Dutch economist and physicist, Tinbergen [36]. Pöyhönen [30] and Linnemann [25] also joined the precursor group.

By making a reference to Newton's law of universal gravitation, Tinbergen proposed a gravity model of trade in a form described by the following equation

$$X_{ij} = C\frac{Y_i^{\alpha} Y_j^{\beta}}{D_{ij}^{\delta}}, \tag{1}$$

where:

X_{ij} – trade stream between country *i* and *j*,

Y_i – exporting country's gross national product, Y_j – importing country's gross national product,

D_{ij} – geographical distance between economic centres (capital cities) of country *i* and country *j*,

α, β, δ – trade elasticity relative to the exporting country's gross national product, the importing country's gross national product

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and the distance between these two trading countries,

C – gravitational constant.

The basic equation applied in the evaluation of gravity models of trade is created by the linearisation of equation (1). After making a two-sided logarithm we receive the following equation:

$$\ln X_{ij} = \ln C + \alpha \ln Y_i + \beta \ln Y_j - \delta \ln D_{ij} \quad (2)$$

According to the above equation, the value of the bilateral trade exchange X_{ij} between country *i* and country *j* is correlated positively with the economic size of the two countries, expressed by their levels of gross national products Y_i and Y_j, and it is correlated negatively with the distance between them.

While dealing with gravity models of trade, it is essential to determine the variable, which describes 'the strength of mutual influence' of the trading partners, which means a dependent variable (the explained one). This dependent variable may represent exports, imports or the total bilateral exchange being the sum of exports and imports.

The most frequently applied dependent variable is exports [23], [34], [12], [21]. Conducting research with imports as the only variable is very uncommon [15], [24]. An advantage of taking exports as a dependent variable is its lesser deformation resulting from using various protection instruments and the fact that it is taken into consideration in transportation and insurance costs. However, data on exports may be burdened with a certain error. This error is traced back to tax forms filled in by companies, which sometimes for taxation reasons decrease or increase the value of their exports when they receive subsidies.

Total bilateral trade exchange is relatively frequently taken as a dependent variable in empirical studies [5], [37], [9], [22]. Defining a dependent variable in such a way represents, on the one hand, a holistic approach to trade exchange, but, on the other hand, it means facing problems with complete information availability. In fact, both on the exports and imports sides there occurs incomplete information; therefore, considering the two directions of trade may occasionally lead to their cumulation [11].

While constructing a gravity model, it is an important issue to determine which variables will be treated as countries' masses, i.e., what will decide about the strength of an economy's attractiveness, and in what way the distance between trading partners will be described.

Countries' economic value, which functions as an attraction factor, may be measured in a similar way to that proposed by Linnemann [25] – a combination of Gross National Product and the number of citizens. After the publication of Anderson's [3] and Bergstrand's [7] works explaining basic theoretical assumptions of gravity models, the measure most frequently applied in empirical works of trading countries' income is their Gross Domestic Product. For the purpose of a better adjustment of the model to the actualities, many authors frequently consider trading partners' *per capita* income as an explanatory variable [20], [23], [10], [31]. Empirical research proves that trade volume between developed countries tends to be higher [21].

In Newton's model distance represents the resistance that masses need to overcome on their way to each other, so it functions as a factor diminishing the gravity force. In models of international trade the geographical distance reflects predominantly transport and communication costs, which impact significantly trade exchange volume between trading partners. However, it is not the only factor affecting the intensity of trade exchange between a pair of countries. Another factor relative to the geographical distance is the common border line (or the lack of one) between these countries. Neighbouring countries which share the same border line tend to trade more frequently than those which do not have a common border line [35], [29].

Although somewhat differently, McCallum [27] also applied gravity models to deal with the problem of border lines. While comparing the trade exchange between specific provinces in Canada with the trade exchange between the state of Canada and some US states, he observed the occurrence of a so-called border effect. He proved that the trade exchange between a country's distant parts (regions) reaches a decidedly higher level than between two neighbouring regions from two different countries (sharing a border line). In the case of selected Canadian provinces the trade exchange volume was twenty-fold greater than the trade exchange volume recorded between Canada and the United States.

Other factors that may stimulate or impede a bilateral trade exchange between countries

are dummy variables describing a common culture, in particular a common language, national identity, tradition or history [13]. Cultural ties due to relatively low barriers to running business activity on foreign markets (the use of the same language facilitates communication), low transaction costs (the ease of transferring information) and a similar demand structure facilitate significantly trading activity [38].

A factor that strengthens bilateral trade exchange is the partners' participation in regional group integration. Market liberalisation, which is an element of integration processes, affects the efficiency of resource allocation in economies [6]. The impact of regional economic integration on resource allocation in an economy is usually analysed by means of the following two effects: trade creation and trade diversion.

The effect of trade creation means creating new trading streams between countries, which form an integration group. This effect results from making use of differences in production costs and from the appearance of new additional impulses for trading between an integration group's members due to unlimited liberalisation of trading with the simultaneous existence of barriers to trading with countries from outside the European Union.

The effect of trade diversion consists in replacing supplies from non-member countries with supplies provided by countries that are members of an integration group and whose competitiveness has increased due to removal of trade barriers.

Gravity models constitute an instrument that is frequently applied in researching the impact on mutual trading of the membership of some countries belonging to the same integration group. Studies of the effects of establishing integration groups usually consist in introducing dummy variables for individual groups into models and estimating their significance. While analysing research outcomes of various studies conducted on groups Greenaway and Milner [17] found that the majority of those studies had shown positive trading effects resulting from the implementation of regionalism processes [1], [8]. However, as pointed out by Baier and Bergstrad [5], recent research into the issue does not confirm explicitly the previous results. Endoh [14] found that the Latin American Free Trade Agreement has exhibited neither trade creation nor trade diversion on trade with Japan. Similar conclusions were reached by Roberts [32] and Rojid [33]. The former examined the effects of free trade between China and the ASEAN countries, and the latter between the COMESA countries.

2. Panel Gravity Model for Exports from European Union Member States

Analysis of the factors that determine bilateral trade exchange of European Union member states includes the panel gravity model. The volume of exports *per capita* of European Union member states from 1999–2010 was taken as the dependent variable. The research covered 27 countries which were EU member states in 2010. GDP *per capita* and FDI *per capita* were considered as potential explanatory values. The value of foreign direct investment for specific member states was aggregated over time and presented as a total of the period 1999–2010. The impact of geographical distances between countries expressed as the number of kilometres between capital cities of trade partners was also taken into account. In addition, the impact of the fact of being an EU member state on the increase in trade volume was examined. The focus was on the answer to the question whether enlarging the European Union has contributed to a significant increase in exports *per capita* from the new member states (EU-12) to the so-called old member states of the European Union (EU-15) and vice versa. Therefore, dummy variables EU_{12}, EU_{15} were introduced into the model.

The following research hypotheses concerning the trade exchange in European Union member states were the subject of verification:

H1: EU membership impacts significantly the increase in trade volumes between member states.

H2: There exists a positive dependence between the level of economic development of an EU member state measured by its GDP *per capita* and the volume of its exports *per capita*.

H3: Foreign direct investments strengthen considerably the export potential of member states. Foreign direct investments contribute rather to increases in exports than to satisfying the internal demand.

H4: There exists a negative dependence between the geographical distance between member states and their trade volume.

Estimation of the following model for the cross-country analysis in view of the above hypotheses was made

$$\mathbf{X}_{ijt} = \boldsymbol{\beta}_{ij} + \boldsymbol{\beta}_{t} + \beta_1 \mathbf{GDP}_{it} + \beta_2 \mathbf{GDP}_{jt} + \beta_3 \mathbf{FDI}_{it} + \beta_4 \mathbf{FDI}_{jt} + \alpha_1 \mathbf{UE}_{12} + \alpha_2 \mathbf{UE}_{15} - \gamma \mathbf{d}_{ij} + \boldsymbol{\varepsilon}_{ijt}, \quad (3)$$

where $\boldsymbol{X}_{ijt}$ is the vector of the dependent variable, $\boldsymbol{GDP}_{it}$, $\boldsymbol{GDP}_{jt}$, $\boldsymbol{FDI}_{it}$, $\boldsymbol{FDI}_{jt}$, $\boldsymbol{d}_{ij}$ are vectors of the explanatory variables, $\boldsymbol{EU}_{12}$, $\boldsymbol{EU}_{15}$ are vectors of dummy variables that indicate European Union membership, $\boldsymbol{\beta}_{ij}$, $\boldsymbol{\beta}_{t}$ are vectors of individual and time effects in the panel model, $\boldsymbol{\alpha}_1$, $\boldsymbol{\alpha}_2$, $\boldsymbol{\beta}_1$, $\boldsymbol{\beta}_2$, $\boldsymbol{\beta}_3$, $\boldsymbol{\beta}_4$, $\boldsymbol{\gamma}$ are structural parameters of the model, $\boldsymbol{\varepsilon}_{ijt}$ is vector of disturbances. All variables without dummy variables are expressed in logarithms. The description of specific variables and the sources of data used are shown in Table 1 and Table 2.

Tab. 1: Variables used in the analysis of European Union member states' trade volumes

Symbol	Description of variables
$\mathbf{X}_{ijt}$	Exports *per capita* from country *i* to country *j*, in the time period *t* [in millions of Euros]
$\boldsymbol{GDP}_{it}$, $\boldsymbol{GDP}_{jt}$	Gross Domestic Product *per capita* in an exporting country *i* and in an importing country *j*, in the time period *t* [in millions of Euros]
$\boldsymbol{FDI}_{it}$, $\boldsymbol{FDI}_{jt}$	Foreign direct investment *per capita* aggregated over time in an exporting country *i* and in an importing country *j*, in the time period *t* [in millions of Euros]
$\mathbf{EU}_{12}$	Dummy variable, it takes the value of 1 for the new member states, (UE-12) from the year 2004 on and the value of 0 prior to 2004. In the case of Romania and Bulgaria from 2007 on.
$\mathbf{EU}_{15}$	Dummy variable, it takes the value of 1 for the old member states, (UE-15) from the year 2004 on and the value of 0 prior to 2004
$\boldsymbol{d}_{ij}$	Geographical distance between capital cities of countries *i* and *j* [in thousands of kilometres]

*The values of the variables were adjusted by inflation (they are real values)

Source: own

Tab. 2: Sources of data used in the research

Data	Source
Exports	EUROSTAT http://epp.eurostat.ec.europa.eu/portal/page/portal/international_trade/data/database
Gross Domestic Product	EUROSTAT http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/data/database
Foreign Direct Investment	UNCTADSTAT United Nations Conference on Trade and Development http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx
Geographical distance between capital cities	Centre D'Etudes Prospectives et D'Informations Internationales http://www.cepii.fr/anglaisgraph/bdd/distances.htm
Population	EUROSTAT http://epp.eurostat.ec.europa.eu/portal/page/portal/population/data/database

Source: own

3. Analysis of the Direction and Strength of the Impact of the Factors that Determine the Level of Exports from European Union Member States

Interpreting the impact of explanatory variables in gravity models is a complex task. It is so since we have to deal with the simultaneous impact of two effects. The first – the push effect – consists in pushing out trading streams in the case of source regions, i.e., exporters, and the second – the pull effect – is the effect of attracting trading streams in the case of target regions, i.e., importers. The statistical significance of a proper structural parameter proves the occurrence of the push effect or of the pull effect. The statistical insignificance of a structural parameter indicates the lack of the impact of factors which, in accordance with the trade theory, determine the trade volume. The sign of the estimate obtained indicates, in turn, the direction of the impact of specific trade determinants.

Based on the possessed data we conducted the Hausman test [18], which indicated the occurrence of a correlation between random errors and explanatory variables. The estimator of a panel model with random effects (RE) is biased and inconsistent and for that reason the estimation of a panel model with fixed effects (FE) is preferred. Therefore, the following three specifications of a panel model were considered: a panel model with individual effects, a panel model with time effects, and a panel model with both individual and time effects. Test F was conducted for further specifications and it indicated only the significance of individual effects. Finally, estimation of a panel model (FE) with individual effects was made.

In order to estimate the parameters of the panel gravity model we applied the Hausman-Taylor estimator [19]. The calculations were made with the application of the R-Cran software. The software uses the *plm* package (major procedures include: *plm, pht, pFtest, phtest*).

Table 3 presents the results of the estimation performed for a selected specification of a panel model.

Tab. 3: The results of the estimation of a panel gravity model made for exports from European Union member states in the years 1999–2010

Parameter	Estimate		p-value
α_1	1.9861		0.0211
α_2	1.1217		0.0154
β_1	9.5644		0.0012
β_2	9.3683		0.0032
β_3	5.1351		0.0017
β_4	0.0213		0.6783
Γ	-20.8356		0.0014
Statistical verification of the model			
F test statistics	4.3306	p-value	0.0001
Hausman test statistics	9.3931	p-value	0.0091
Adj. R^2	0.9116	Observation	8,424

* A 5% significance level was taken for assessing the statistical significance of the parameters.

Source: own

A significant increase in trade volume between the EU-12 and EU-15 states could be noticed prior to the enlargement of the Community and it resulted from the signing of the Association Agreement. After the formal enlargement of the European Union, however, we could observe a further increase in trade volume between its old member states and the newly accepted states. Parameters α_1 and α_2 proved statistically significant. A positive

estimate of the parameter α_1 indicates a substantial increase in the level of exports *per capita* from the 12 new member states to the 15 old EU member states in the period following their accession. A positive estimate of the parameter α_2, in turn, indicates a considerable increase in the level of exports *per capita* from the 15 old member states to the 12 new member states of the European Union in the period following the enlargement of the Community. That means that the trade liberalisation hitherto (resulting from association agreements) had not exhausted fully the benefits of the integration. The formal accession of the new EU members was still accompanied by the effect of trade creation since the mutual trade exchange between the EU 15 and the EU 12 was continually increasing. As a matter of fact, the formal enlargement of the European Union did not lead to any major modifications of the customs burden; however, many non-tariff barriers were abolished. As evaluated by *The Heritage Foundation*, the formal enlargement of the European Union improved significantly the conditions of cooperation between the old EU states and the new ones. That is reflected, among other things, by the indexes of trade freedom, which provide information on the so-called liberalisation from tariffs and non-tariff barriers. The index of trade freedom published in a report by the *Index of Economic Freedom* is prepared on an annual basis by *The Heritage Foundation* in cooperation with the *Wall Street Journal*. The index published for a specific year is based on data and information concerning the previous years and, therefore, most frequently the delay encompasses a three-year period. After the enlargement of the European Union, in the case of the new member states, the trade freedom indexes grew substantially reaching the level represented by the countries which had been EU member states prior to the enlargement of the European Union. The results obtained allowed the verification of the research hypothesis H1, which focuses on the positive impact of EU membership on the growth of trade exchange. It was proved that after the joining of the Community by the new member states we saw a significant rise in the level of exports from the EU-12 countries to the EU-15 countries and inversely.

When analysing the impact of GDP *per capita*, which may be identified with a country's level of economic development, it must be stated that the parameters β_1 and β_2 proved statistically significant. Taking into account the positive evaluation of the parameter β_1 we may formulate a conclusion that for exporting countries there holds a positive impact of GDP *per capita* on the level of exports *per capita*. Also in the case of importing countries the positive evaluation of the parameter β_2 denotes a positive impact of GDP *per capita* on the level of imports *per capita* in those countries. Countries with a higher level of economic development, apart from greater importing needs resulting from a good economic situation, also display a larger exporting potential which translates into a higher level of exports, if compared with countries with lower values of GDP *per capita*. The results obtained allowed us to verify the research hypothesis H2 on a positive dependence between the level of economic development of an EU member state measured by its GDP *per capita* and the volume of its exports *per capita.*

Foreign direct investment belongs to a group of trade determinants which may exert a varied influence on the development of trade volume between countries. On the one hand, the flow of capital in the form of foreign direct investment may lead to a technological modernisation of the economy that is related to the development of industry and manufacture of processed goods, which, in turn, fosters the development of trade. On the other hand, foreign direct investment may be initiated by the willingness to service the host country's market and then it functions as a substitute to trade [2]. In the case of foreign direct investment the parameter β_3 proved statistically significant and the parameter β_4 proved statistically insignificant. The positive value of the parameter β_3 indicates a positive impact of foreign direct investment on the value of exports *per capita*. The research result allowed the verification of the hypothesis H3 according to which foreign direct investment strengthens considerably the export potential of member states. The statistically insignificant parameter β_4 indicates the lack of a major impact of foreign direct investments on import volume.

The geographical distance factor is essential for the development of trade exchange. Its impact is mainly related to the costs of transportation and insurance of goods being the subject of exchange. The parameter γ, which measures the impact of geographical distances

between specific countries of the European Union on their bilateral trade exchange, proved statistically significant. A negative estimate corresponds to the theoretical predictions and indicates that trade volume decreases when the geographical distance between countries increases. That finding enabled us to verify the hypothesis H4 according to which there is a negative dependence between the geographical distance between member states and their trade volumes.

As a result of the estimation of a panel gravity model 8,424 residuals were obtained. Based on the obtained realisations of the disturbances it is possible to conduct an analysis of selected residual values that are untypical values. Untypical values are deemed to be such values whose absolute value exceeds a threefold value of the standard deviation.

Such an analysis enables the identification of the countries whose trade volumes differ considerably from theoretical values that result from the estimated model. For instance, in the case of the trade exchange volumes of Belgium and Luxembourg, both exports and imports in the countries could be higher than implied by the model (positive residuals). That proves a significant role of foreign trade in both countries' economies that is proportionally greater than in the whole of the European Union. In the case of the Bulgarian and Romanian economies, the weakest ones in the European Union, we can observe a reverse situation – the occurrence of negative untypical residual values. In turn, the analysis of residuals conducted for Cyprus, Greece, and Malta, whose GDP is derived mainly from revenues from the tourist industry, indicates a disproportionally high import volume if compared with their exports.

Conclusion

In recent years the European Union has followed the path of deepening the integration by accepting new member states. The benefits of enlarging the integration group are felt not only by the newly accepted states but also by its old member states. In accordance with the theory, one of the most significant integration effects is growth in mutual trade exchange. The actual development of trade exchange between member states is a vital argument in favour of creating regional integration groups and enlarging them.

The research was focused on finding out whether European Union membership impacts the level of increases in trade volumes between EU member states. The problem was analysed separately for the 15 old member states of the European Union (EU-15) and separately for the new member states (EU-12). The research conducted allowed the formulation of a conclusion that the accession was followed by a significant increase in the level of exports both from the EU-12 countries to the EU-15 countries and inversely. Also, the work evaluated the impact of economic factors such as GDP *per capita*, foreign direct investment and the geographical distance on the development of bilateral trade exchange of European Union member states. The outcome of the research allowed the formulation of a statement that there is a positive dependence between the level of economic development of an EU member state, measured by means of its GDP *per capita* and its exports volume *per capita*. In the case of foreign direct investment, it was found that it improves the export potential of EU member states rather than satisfying the internal demand. Also, the existence of a negative dependence between the geographical distance between member states and their trade volumes was found.

The conclusions formulated in the paper enable us to state that from the perspective of the developmental opportunities the European Union is an entity worth belonging to. The benefits are felt both by the old EU member states and by the new EU member states. The results obtained confirm the relevance of the theories of integration and trade.

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Abstract

DETERMINANTS OF THE EUROPEAN UNION'S TRADE – EVIDENCE FROM A PANEL ESTIMATION OF THE GRAVITY MODEL

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The article is focused on the issue of trade exchange between European Union member states. The trade exchange volume noted an increase after the new members had joined the European Union. That may be observed while analysing statistical data on the trade exchange volume in specific states as well as in the whole of the European Union. A simple index analysis of the trade volume enables researchers to observe changes over time; however, it neglects the causes of these changes. With a view to identifying theses causes, an econometric tool – the panel gravity model – was used for the purposes of the present paper.

The research objective of the paper is to evaluate the impact of selected factors on the development of bilateral trade in the European Union in the years 1999–2010. The group of potential factors describing the size of trade exchange includes the following: the Gross Domestic Product per capita, foreign direct investment per capita and the geographical distance between trading partners.

The research outcome enabled us to draw a conclusion on a positive dependence between a member state's GDP and its export and import volume. In the case of foreign direct investments, their positive impact on the improvement of member states' exporting potential was identified. Moreover, a negative dependence between the geographical distance and the size of their trade exchange was proved. Also, the paper discussed the impact of EU membership on increasing trade exchange volume. The research found an essential increase in exports from the new EU-12 countries to the EU-15 countries and inversely.

Key Words: *Trade, gravity model, panel estimation, European Union.*

JEL Classification: *C33, F14.*

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CURRENT AND FUTURE USE OF MANAGEMENT TOOLS

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Introduction

A plethora of management ideas and concepts have been developed in management literature over decades [15], [41], [55], [58], [60]. But those management ideas and concepts are in the literature rarely discussed on the level of their use as a management tool [2], [57]. It is evident that developed ideas and concepts (consequently also tools) are in literature mainly dealt with separately, for the most part as a single tool [14], [21], [24], [36], [42], while some studies consider few tools jointly [25], [40] due to their interrelatedness.

A holistic consideration of the different tools or the plethora of management tools together is rarely found in literature. A longitudinal research aiming to examine trends about use, current use, and percentage of satisfied users for selected tools has been conducted for more than a decade by international research group [47], [48], [49]. Comprehensive studies dealing with more management tools beyond viewpoints considered by this research group do not exist. Partial discussions and empirical investigations about single or a few selected management tools together reveal some differences in patterns of management tools use worldwide. Our contribution continues these discussions in a more comprehensive manner. This paper focuses especially on future use and issues related to the future use of management tools in organizations within catching up countries.

Turning to the impact of previous experiences with management tools use on their future use by employees' in organizations, evidences from everyday life show that previous (positive and negative) experiences importantly influence future use, motivation for use, etc. [1], [8], [54]. Management literature dealing with these issues is rather limited [5], [52]. More often, the impact of previous experiences (with use, participation, observation, etc.) on the behavior of existing or further potential users is considered in various other fields, such as: (1) shopping experiences enjoyment has a significant positive influence upon future customers' intentions to shop [22]; (2) previous experiences with service (e.g., insurance agency, travel agency) influence customers' decisions on future use of services [8], [18]; and (3) the impact of behavior experiences on the desired behavior in organizations (e.g., manager as a role model), etc. [5], [20], [46]. Those examples emphasize the importance of past experiences with use and engagement for future use, engagement, enrolment, retaking service, etc.

In the mainstream of management literature [13], [15], [53], the link between previous working experiences (e.g., about working and behavior) and future behavior is not explicitly considered. This link gets more attention in the field of organizational behavior [5], [28], [52] and work psychology [3], [34]. Very often the examination of the link between attitudes and behavior is based on the theory of planned behavior, first introduced by [1]. Those cognitions are the groundwork for our discussion.

Based on the above findings, we presuppose that the management tools used in organizations are importantly dependent upon the previous experiences of other users (e.g., co-workers, managers). Those experiences can importantly influence an employee's perception about motivation for the use of management tools. This consequently results in an employee's action to either use or not use.

In the framework of a more holistic agenda for consideration of management tools use and their future use, this paper focuses on: (1) differences in management tools use among employees in Slovenian and Croatian organizations; (2) examination of the links between employees' previous experiences

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with management tools use and its future use (we consider future use either as (a) a desire to use those tools among employees who are already familiar with single tools or (b) a desire to become familiar with management tools among employees who do not know a single management tool yet); and (3) determining patterns of management tools for future use in Slovenia and Croatia (as examples of catching up countries) based on experiences from high-developed market economies.

1. Literature Review

1.1 Management Tools

Management development has gone through several distinctive phases [13], [60]. In each phase, numerous management ideas and concepts have been developed [2], [57], [58]. Use and understanding of management ideas are rather different in literature and business practice. In the process of management concepts use, a different level of management ideas for conceptualization and realization has occurred, ranging from 1) concept – as a rather comprehensive, developed, and defined basis for consideration of an idea; 2) methodology – as an entity or closely related collection of methods, rules, and disciplinary postulates; 3) methods – as goal- and problem-ordered types of procedures, these are especially regular and systemic ways of setting and realizing the given goal; 4) techniques – as the manner in which technical details are treated; to 5) necessary tools, known also as instruments [10], [41], [47], [50], [51], [62].

Management tools involve set of concepts, processes, exercises, and analytical frameworks. This definition was coined by [47] and it is based on his survey of management tools. A general management literature [13], [50], [53], as well as some other management authors using the term management tool [33], [40], does not define it.

Building on the above findings, a management tool can be defined as an entity of instruments to support implementation of concepts and ideas at all levels of conceptualization and realization of concepts, ultimately aiming to support organizational processes.

Rigby and his peers proposed a typology of management tools, defining four groups of management tools. A typology is framed in a matrix, having two dimensions: (1) use of management tools and (2) percentage of satisfied users. This typology classifies management tools according to the mean values of use and satisfaction obtained in research [47], [48], [49]. Due to the lack of comprehensive management tools studies in literature, there is no general valid or content-related classification of management tools.

In searching for a content-related classification, known management tools can be organized into two groups based on a historical development of concepts, current use, and their potential to use. The first group encompasses traditional management tools that had been developed in earlier management development phases. The majority of those tools are today well-known and most widely globally used tools, like benchmarking, strategic planning, mission and vision statements, customer relationship management, outsourcing, the balanced scorecard, and customer segmentation [47], [48], [49]. Literature reveals that globally most used tools are aimed to support customer satisfaction (e.g., customer relationship management, customer segmentation) [27], [45], followed by those supporting the long-term and clear future development of an organization (e.g., strategic planning, mission and vision statements) [25], [36], [40], supporting competitive comparing (e.g., benchmarking) [11], [24], and supporting optimization processes in an organization (outsourcing, core competencies, business process reengineering) [21], [42], [43]. There is also evidence about decreasing the use of some traditional tools. For example, the popularity of business process reengineering has fallen in the last two decades due to numerous unsuccessful reorganizations of business processes [14], [40], [49]. Also total quality management, first treated as a potential source of sustainable competitive advantage [42], has become less used when its use did not result in sustainable profitability [40], [49].

In the second group are contemporary tools. A brand new management concept or tool is rarely found, since the majority of tools have their roots in earlier phases of management development [41]. This group encompasses tools for which tool evolvement is significantly based upon either information technology development or supporting an existing management concept with information technology. This group also encompasses tools developed in later phases of management

development. Furthermore, supporting existing management concepts with information technology, results in a higher potential for this concept [6], [41]. Typical representatives of this group are, for example, shared service centers – aiming to a set of activities (e.g. HRM activities) under one roof for selected organizational parts [19]. A really new tool could be characterized as a corporate blog, since its serious use is a recent phenomena [39]. Organizations use blogs for direct communication with their target population, information dissemination, brand loyalty development, etc. [39]. Further, radio frequency identification has become a widely used tool (especially in supply chains) since it enables acquiring data of any entity that can be psychically tagged and wirelessly scanned [35]. Also relatively new are loyalty management and consumer ethnography [32]. For example, knowledge management gets a very new dimension of use when electronic databases are used to store knowledge and interfaces enable easier knowledge capture and its dissemination [6].

An overview of relevant literature suggests that there are numerous partial discussions about management tools, especially those most widely used. Those discussions are in majority limited to dealing with single management tools and in the framework of selected purpose of discussion, either theoretical, empirical, or both. A comprehensive study of management tools is known by Bain Research Group [47], [48], [49], which examine the use of management tools in different worldwide regions, users satisfaction, and selected issues regarding tools implementation. There is no evidence about the discussions dealing with the patterns of management tools use in different areas and examining reasons for differences in use.

Literature offers different viewpoints for researching future use of management tools [1], [3], [41], [58], [61]. We put our focus on the impact of previous users' experiences (considered on the basis of current use) with management tools use on future use of management tools by organizational members.

1.2 Previous Experiences with Management Tools Use and Their Future Use

Observed behavior in organizations is only a visible response that is the result of the impact of interrelated factors that influence employees' behavior. Literature offers different propositions of what drives employees' behavior. Employees' behavior is driven by: (1) the impact of their personal values [17], [54], and (2) the joint impact of cognitive base and personal values [20]. [1] explains that employees' behavior is based on the link between attitudes and behavior, known as theory of planned behavior.

Different well-known models have aimed to explain the impact of different stimuli on employees' behavior [1], [5], [37] and have several basic building blocks for explaining (future) behavior: (1) employees' own observations (e.g., various stimuli from the environment and from inside of the organization and information about experiences/observations from peers/colleagues), (2) perception considered as a cognitive process that enable employees' interpretation and understanding of its surroundings, and (3) a response that translates perception into actual behavior.

From existing models, we used for our research the model of the information-perception-action (IPA) process, which suggests that employees first get information from their surroundings (e.g. coworkers, managers), that motivate, direct, or influence their behavior. Next is the perception phase, in which employees attach meaning to the available information and experiences. Then the perception, which is based on information, results in actual behavior [4]. According to the purpose of this paper, presumptions about the impact of current use (i.e., experiences with use) of management tools on future use are based on [1]'s theory of planned behavior and the cognitions about the IPA link, as suggested by [16] and later modified by [5]. Next, we examine each IPA model phase in more detail.

The first phase of the IPA link is gathering information. In this phase, employees observe other users and also gather information about experiences with management tools use by themselves. The main sources for obtaining information are especially other users' experiences with management tools use in an organization (e.g., managers, coworkers). Dispatching positive signals about management tools and their beneficial use (by organizational members) is most important in the process of influencing others and their intentions to use tools. In this process, also, management plays an important role, since it gives signals about use and satisfaction with single management tools to the other members of the organization through formal and informal communication [13], [15], [50], [53]. In terms of informal communication,

for example, management by wandering around could carry over their experiences with management tools to other employees. Another informal communication technique is grapevine, which is typically represented by (1) a gossip chain, where one employee tells many other employees, and (2) cluster chain, where a few employees tell selected others. Those are important channels to disseminate signals of management tools use.

In current-day organizations, important sources of information about experiences with use of management tools in organizations include recommendations, cognitions, instructions, requirements, etc., from different types of organizational channels. Most common are organizational forums, an organizational intranet, and an organizational knowledge repository. Employees can also obtain information about experiences with management tools outside their organizations (e.g., scientific publications, surveys, forums, and social networks). After having gathered a sufficient level of information, the phase of perception is set out.

In the second phase, the main purpose is to determine selected important findings about current management tools used in an organization. In that framework, several basic questions must be answered, like (1) for what purpose/work has the management tool been used?; (2) what are the requirements and pre-conditions for use of management tools (e.g., in terms of its availability, needed knowledge for activation); and (3) who uses management tools, for what work, and in which areas of working?

The perception process, where an individual creates one's own picture about current use of management tools, is importantly dependent upon an entity of (1) subjective starting points of employees – namely personal values, culture, ethics, and norms, (2) as well as on rational factors related mainly to the availability of management tools, requirements for management tools use, etc. Created picture than represent a base for an action – i.e., intended behavior.

The third phase of the IPA process is action. The perception of gathered information about management tools use results in actual behavior. It is evidently that people use practices that are proven to be good [3], [53] or have positive signals of others in favor of its usage in an organization (e.g. managers) [20], [46]. Based on perceptions about management tools use, employees' actions – according to our research problem – will include the following actions: (1) the desire to use management tools among those employees who already know a single management tool, and (2) the desire to become familiar with management tools among those employees who do not know a single management tool. A future use of those organizational members that already use management tools is not considered.

2. Research Design

In the literature, discussions prevail dealing with single management tools [13], [14], [40], [43], [57], while groundwork in this field has been done by Bain research group [47], [48], [49] with examining use, satisfaction, and trends of management tools use for more than a decade. Our research upgrades existing findings and provides a deeper understanding of the linkage between current use and future use of management tools [12], [41]. Our research is also aimed at identifying current and future patterns of management tools in catching up countries. In that framework, we:

- Expanded the scope of researching management tools. In the first part of the questionnaire, respondents have to decide about each management tool whether they: (1) know it and use it (and whether they are satisfied or dissatisfied with the tool use), (2) know it, but don't use it (and whether they want to use the tool or do not need the tool for their work), or (3) do not know it (and whether they want to get familiar with a tool or do not need the tool for their work).
- Asked respondents about issues related to management tools implementation, the need for tools and education about their use, the duration of using management tools, the criteria for selecting tools, and possible improvements due to the management tools use implementation. In the third part of the questionnaire, we collect demographical data.
- Examined the influence of the current use of management tools on future use of management tools (1) by employees who are already familiar with management tools, and (2) those who want to become familiar with management tools.
- Examined the influence of the percentage of satisfied users on the future use of management tools (1) by employees who are already familiar with management tools,

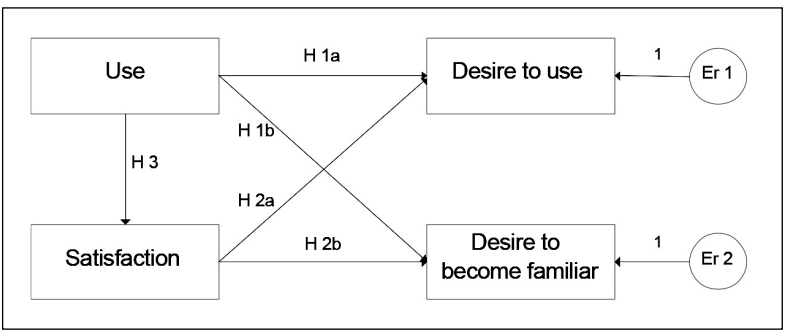
and (2) those who want to become familiar with management tools.
- Compared the obtained results for Slovenia and Croatia, as well as with existing literature.
- Discussed future patterns of management tools use in catching up economies (e.g., evidence from two former transition countries), based on experiences from high-developed economies.
- Included in the survey were 25 management tools, which were in the last decade most frequently mentioned in management literature.
- Based our analysis procedures on structural equation modeling.

2.1 Research Model

The main predisposition underlying our hypotheses is related to the impact of previous experiences on the future use of management tools of those employees who either desire to start using a tool or become familiar with a single management tool. We presuppose that employees' previous experiences with use and satisfaction with management tools importantly influence their desire to use and become familiar with management tools (i.e., future management tool use).

In the model are hypothesized relationships between the following entities of our research about management tools in Slovenia and Croatia: (1) use of management tools, (2) share of satisfied users, (3) desire to use by those employees who already know a management tool, and (4) desire to become familiar by those employees who do not know management tools. The hypothesized relationships are presented in Figure 1. The causal model in Figure 1 presents the impact of current management tools use and the percentage of satisfied users who use management tools, on desire to use management tools and on desire to become familiar with management tools (i.e., future management tools use).

Fig. 1: Hypothesized model



Source: own

2.2 Research Hypotheses and Research Question

Based on the presented causal model, the following hypotheses were postulated:
- H 1: The current use of management tools is positively associated with the future use of management tools.
- H 1a: The use of management tools has a significant and positive impact on the desire to use management tools for those organizational members who are already familiar with management tools.
- H 1b: The use of management tools has a significant and positive impact on the desire to become familiar with management tools for those organizational members who are not familiar with management tools.
- H 2: The current satisfaction with the use of management tools is positively associated with the future use of management tools.
- H 2a: The share of satisfied users has a significant and positive impact on the desire to use management tools for those organizational members who are already familiar with management tools.

- H 2b: The share of satisfied users has a significant and positive impact on the desire to become familiar with management tools for those organizational members who are not familiar with management tools.
- H 3: The use of management tools and share of satisfied users are positively associated.

In line with the aims of our paper, we also postulated the following research question: "The pattern of management tools use differs in organizations operating in catching up economies and high-developed market economies."

2.3 Methods Used

Normality tests reveal that majority variables in research do not markedly violate the assumptions about normal distribution [23], [31]. For the research question – comparing the pattern of management tools use worldwide – descriptive statistics were used (i.e., mean values). The examination of relations between current and future use is based upon structural equation modeling techniques, as suggested by [7].

2.4 Data Used

Data were collected in year 2010 in Slovenia and Croatia. Altogether, we sent 1,500 questionnaires to organizations, respectively 750 in Slovenia and 750 in Croatia. The target population was management, regardless of its hierarchical position. In Slovenia, we got back 210 answers and in Croatia 223 answers. Considered were only returned questionnaires, which had very few missing data. We included in the analysis 155 Slovenian and 185 Croatian questionnaires. This resulted in a respondent rate of 28.0% for Slovenia and 29.7% for Croatia, whereas the overall response rate was 28.9%. Regarding considered questionnaires, the respondent rate was respectively 20.7% and 24.7%, while the overall response rate was 22.7%. For both countries, the organizations included present representative sample (i.e., representative regional coverage; the sample met the basic activity structure of organizations in the country, with a good fit to the industry-based structure of the national economy).

2.5 Sample Characteristics

Some basic mean values that characterize both samples are:

- An average age is 44.35 years for Slovenian respondents and 36.90 years for Croatian respondents;
- Slovenian respondents have on average 20.49 years of working experiences, while their Croatian counterparts on average 13.69 years; and
- Slovenian respondents work in a current organization on average 9.03 years, while their Croatian counterparts on average 9.56 years.

A detailed demographic of survey respondents in Slovenia and Croatia is outlined in Table 1.

3. Results

3.1 Results – Descriptive Statistics

Results about knowing and using management tools, the share of satisfied users, the desire to use management tools, and the desire to become familiar with a single management tool for employees in Slovenian and Croatian organizations are outlined in Table 2.

Based on an in-depth analysis of results regarding knowing and using a single management tool, it is evident that:

- Outsourcing is the most known and used management tool in Slovenia, while in Croatia it is not ranked among the top five management tools.
- In Croatia, the most known and used management tool is mission and vision statements, while in Slovenia it is not ranked among the top five management tools.
- After outsourcing in Slovenia and mission and vision statements in Croatia, the most used management tools in both countries are benchmarking and core competencies.
- Several tools are used significantly more in Slovenian that in Croatia, like outsourcing, knowledge management, total quality management, the balanced scorecard, business process reengineering, mergers and acquisitions, corporate blogs, strategic alliances, six sigma, lean operations, etc.
- Only a few tools are more frequently used in Croatia than in Slovenia, like mission and vision statements, customer relationship management, customer segmentation, shared service centers, etc.

Table 3 presents ranks for the top 10 most used tools in Slovenia and Croatia.

Tab. 1: Demographic profile of the respondents in survey

Gender	**Slovenia**	**Croatia**	***Organization size***	**Slovenia**	**Croatia**
Male	48.4%	48.1%	Micro (<9)	13.5%	7.0%
Female	51.6%	51.9%	Small (10 – 49)	18.7%	8.1%
Education			Medium (50 – 249)	43.9%	23.8%
Secondary school	4.2%	9.2%	Large (>250)	23.9%	61.1%
Bachelor degree	56.9%	61.4%	***Department***		
Master/Ph.D.	38.9%	29.3%	Research & development	3.2%	17.0%
Type of education			Fundamental processes	25.3%	24.7%
Humanistic	2.8%	1.1%	Accounting	14.9%	4.4%
Social	68.3%	58.7%	Marketing	11.7%	8.8%
Natural and technical	20.7%	34.2%	Board of directors	29.2%	37.4%
Other	8.3%	5.9%	Other	15.6%	7.7%
Position			***Economy sector***		
Specialists	40.7%	44.3%	Primary	1.9%	1.1%
Low management	8.7%	12.6%	Secondary	27.7%	18.6%
Middle management	32.0%	24.6%	Tertiary	43.2%	71.6%
Top management	12.7%	10.9%	Quaternary	27.1%	8.7%
CEO	6.0%	7.7%			

Source: own survey in Slovenia and Croatia

Tab. 2: Current use, satisfaction, and future use of management tools in Slovenia and Croatia (in %) (part 1)

Management tools	**Usage and knowing of tools**		**Satisfied users**		**Desire to use**		**Desire to become familiar**	
	SLO	**CRO**	**SLO**	**CRO**	**SLO**	**CRO**	**SLO**	**CRO**
Strategic Planning	87.1	79	90.6	70.7	58.5	69.1	75.0	81.6
Customer Relationship Management	77.4	78.4	87.5	85.7	43.8	58.0	65.7	90.0
Customer Segmentation	69.3	74	97.3	90.1	43.5	48.4	52.2	72.9
Benchmarking	88.4	78.3	94.7	87.6	71.0	73.1	55.6	92.5
Mission and Vision Statements	69	88.6	80.0	85.3	65.4	33.3	43.5	33.3
Core Competencies	72.3	77.3	88.6	75.9	66.7	76.9	54.8	66.7
Outsourcing	89.7	76.2	95.5	71.6	47.1	37.7	42.9	47.7
Business Process Reengineering	71.6	45.4	87.2	94.6	64.1	48.9	46.3	54.5
Scenario and Contingency Planning	54	42.9	65.7	94.9	37.0	76.3	45.3	77.9
Knowledge Management	79	65.7	86.2	85.5	69.1	78.6	54.8	65.1

Tab. 2: **Current use, satisfaction, and future use of management tools in Slovenia and Croatia (in %) (part 2)**

Management tools	Usage and knowing of tools		Satisfied users		Desire to use		Desire to become familiar	
	SLO	CRO	SLO	CRO	SLO	CRO	SLO	CRO
Strategic Alliances	64.5	36.5	80.8	92.9	40.5	35.3	38.2	55.2
Balance Scorecard	61.7	50.5	98.1	79.4	51.2	50.0	56.9	66.7
Supply Chain Management	62.6	52.7	85.7	94.4	27.5	44.1	35.1	23.3
Growth Strategies Tools	50.9	34.4	81.0	93.3	60.3	69.6	46.7	57.1
Total Quality Management	85.8	63.4	90.5	58.3	50.0	52.3	59.1	62.7
Shared Service Centers	39	42.6	60.0	71.9	18.0	50.0	26.1	53.8
Lean Operations	50.4	13.6	90.0	100	26.5	55.0	36.5	55.1
Collaborative Innovation	51.3	28.4	84.2	68.4	71.7	73.3	55.4	64.6
Loyalty Management	64.6	45.1	76.7	76.0	53.6	55.4	52.7	81.0
Mergers and Acquisitions	76.8	54.4	82.8	88.9	27.0	30.3	42.9	44.4
Six Sigma	42.2	32.3	82.4	90.0	35.4	58.3	49.4	57.4
Offshoring	40	34.4	66.7	85.7	32.1	39.6	38.5	42.0
Consumer Ethnography	40.6	32.4	85.7	93.8	34.7	71.4	40.2	47.5
Corporate Blogs	50.9	44.8	96.3	84.2	45.1	50.8	46.7	46.5
Radio Frequency Identification	31	23.5	63.6	80.0	29.7	50.0	38.1	41.3

Source: own

Tab. 3: **Top 10 most used tools in Slovenia and Croatia**

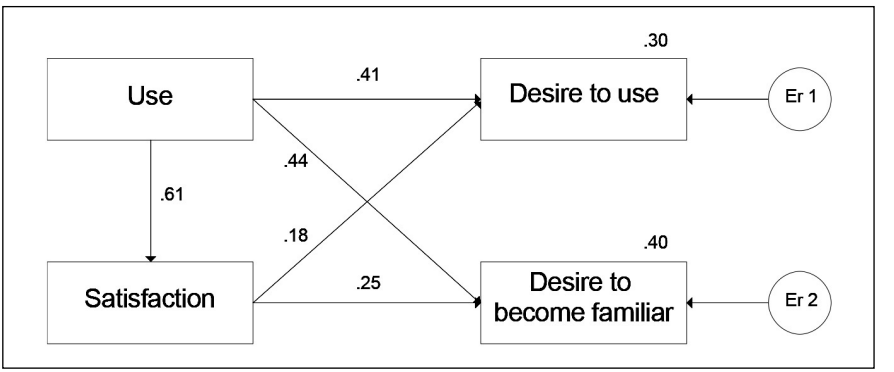
Rank	Management tool (Slovenia)	%		Management tool (Croatia)	%
1.	Outsourcing	57		Mission and Vision Statements	61
2.	Benchmarking	48		Benchmarking	49
3.	Core Competencies	45		Core Competencies	48
4.	Knowledge Management	43		Customer Relationship Management	39
5.	Total Quality Management	41		Customer Segmentation	39
6.	Mission and Vision Statements	36		Outsourcing	38
7.	Customer Relationship Management	36		Knowledge Management	34
8.	Strategic Planning	34		Strategic Planning	33
9.	Balance Scorecard	34		Total Quality Management	27
10.	Business Process Reengineering	30		Business Process Reengineering	21
				Scenario and Contingency Planning	21

Source: own

3.2 Results – Hypotheses Testing

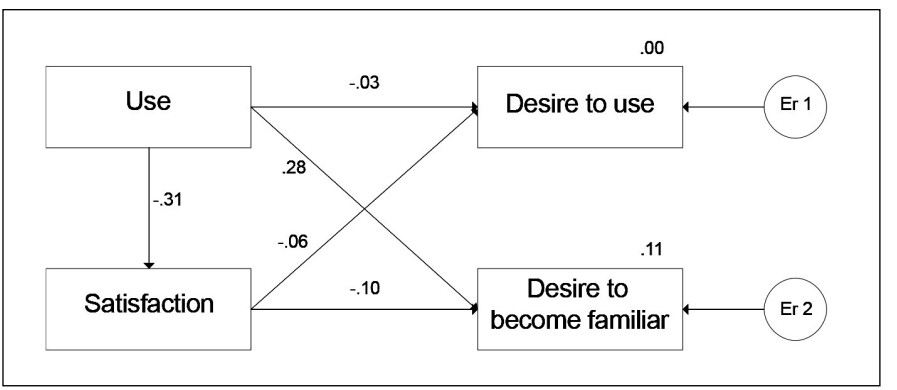
We tested the proposed hypotheses in the research model for Slovenia and Croatia for aggregated data, not for a single management tool. In the interest of space, we outlined the standardized estimates regarding regression weights, correlations, and squared multiple correlations. The results for the Slovenian sample are outlined in Figure 2 and for the Croatian sample in Figure 3.

Fig. 2: Hypothesis testing – Slovenian sample



Source: own

Fig. 3: Hypothesis testing – Croatian sample



Source: own

Management tools use. Management tools use has a relatively strong and positive, even though insignificant, effect on the desire to use management tools for those who already know management tools in Slovenia ($\beta = 0.415$, $p > 0.05$). This means that as the management tool use increases, so does the desire to use them by those who already know a single management tool but do not yet use them. Management tools use has a relatively strong and significant effect on the desire to become familiar with management tools for those who do not know management tools in Slovenia ($\beta = 0.442$, $p < 0.05$). This means that as the management tool use increases, so does the desire to become familiar with them

for those employees who do not know them yet. Management tools use is related to users' satisfaction with management tools in Slovenia ($\beta = 0.608$, $p < 0.05$). We can conclude that as single management tool use increased, so does the number of satisfied users in an organization. These results support hypotheses 1b and 3 for Slovenia, while rejecting hypothesis 1a.

In the Croatian sample, management tools use is not significantly related to (1) a desire to use management tools for those who already know management tools in Croatia ($\beta = -0.010$, $p > 0.05$). This means that an increased use of management tools does not lead to an increased percentage of an organization's members who want to use a management tool among those who already know management tools; (2) a desire to become familiar with management tools for those who do not know management tools in Croatia ($\beta = 0.283$, $p > 0.05$); and (3) users' satisfaction with management tools in Croatia ($\beta = -0.307$, $p > 0.05$). This leads to the conclusion that an increased use of management tools does not lead to an increased number of satisfied users. These results reject hypotheses 1a, 1b, and 3 for the Croatian sample.

Share of satisfied users with management tools. Satisfaction with management tools use (i.e., considered as a percentage of satisfied users) has a positive, but insignificant effect on (1) the desire to use management tools for those employees who are already familiar with management tools in Slovenia ($\beta = 0.181$, $p > 0.05$); (2) and on the desire to become familiar with management tools for those who do not know management tools in Slovenia ($\beta = 0.253$, $p > 0.05$). Thus, hypotheses 2a and 2b are not supported for the Slovenian sample. Satisfaction with management tools use is not significantly related to the desire to use management tools for those organizational members who are already familiar with management tools in Croatia ($\beta = -0.058$, $p > 0.05$), and to the desire to become familiar with management tools for those who do not know management tools in Croatia ($\beta = -0.104$, $p > 0.05$). Thus, hypotheses 2a and 2b are not supported.

The squared multiple correlations show that 30% of the variance in the desire to use management tools for those Slovenian employees who already know a single management tool can be explained by the joint influence of the use and satisfaction. Thus, 70% of the variation in desire to use management tools cannot be explained with the model. On the other hand, the results reveal that use and satisfaction cannot explain variation in desire to use management tools among Croatian employees. Further, the results indicate that 40% of the variance in the desire to become familiar with a single management tool for Slovenian employees can be explained by the joint influence of the use and satisfaction. Thus, 60% of the variation in desire to become familiar with a single management tool is unexplained by two considered factors. On the other hand, for the Croatian sample only 11% of the variation in desire to become familiar could be explained by the joint influence of use and satisfaction. The remaining 89% of the variation in desire to become familiar cannot be explained by two considered factors.

3.3 Results – International Comparison

A comparison of single management tools use in different regions reveals different ranks in different regions. At first glance, it is evident that the worldwide most used management tools are not among the most used in organizations in former transition economics in Central and Eastern Europe (i.e., studied examples of Slovenia and Croatia) and vice versa. The detailed results are outlined in Table 4.

Tab. 4: Use of management tools worldwide[a]

Management tool	Use of management tools							
	GL – 2006	GL* – 2008	NA	EU	AP	LA	CRO	SLO
Strategic Planning	1	2	1	1	2	1	8	8
Customer Relationship Management	2	4	3	4	1	9	4	6 (t)
Customer Segmentation	3	7	6	2 (t)	3	3 (t)	5	11
Benchmarking	4	1	2	2 (t)	9 (t)	2	2	2
Mission and Vision Statements	5	3	4	7	5 (t)	5	1	6 (t)
Core Competencies	6	9	5	5 (t)	4	10	3	3
Outsourcing	7	5	8	5 (t)	7 (t)	3 (t)	6	1
Business Process Reengineering	8	8	10 (t)	10 (t)	5 (t)	14 (t)	10 (t)	10
Scenario and Contingency Planning	9	13	9	8	14	7	10 (t)	12
Knowledge Management	10	14	12	10 (t)	7 (t)	14 (t)	7	4
Strategic Alliances	11	11	7	9	13	13	20	17
Balanced Scorecard	12	6	13 (t)	13	12	11 (t)	13	9
Supply Chain Management	13	12	13 (t)	14 (t)	11	11 (t)	12	15
Growth Strategies Tools	14	16	10 (t)	10 (t)	15 (t)	6	19	18
Total Quality Management	15	17	18 (t)	14 (t)	9 (t)	8	9	5
Shared Service Centres	16	15	18 (t)	19	15 (t)	16	14	23 (t)
Lean Operations	17	-	15	17 (t)	18 (t)	19	25	23 (t)
Collaborative Innovation	18	22	16	20	18 (t)	18	17	19
Loyalty Management	19	24	21	17 (t)	17	20 (t)	15	13
Mergers and Acquisitions	20	10	17	14 (t)	22	17	22 (t)	14
Six Sigma	21	-	22	23	20	20 (t)	22 (t)	20
Off shoring	22	-	18 (t)	21	24	24	24	25
Consumer Ethnography	23	-	23 (t)	22	21	22	18	21
Corporate Blogs	24	-	23 (t)	24	23	25	16	16
Radio Frequency Identification	25	-	25	25	25	23	21	22

[a] Note: Data for Global average (GL) 2006 and 2008, North America (NA) 2006, European Union 15 (EU) 2006), Asia Pacific (AP) 2006), and Latin America (LA) 2006 are calculated upon the results from management tools research [48, 49]. Data for Slovenia and Croatia are from our research.

Source: own and Rigby [48], [49]

4. Discussion

The main purpose of this paper was to examine the linkages between current and future use of management tools and to discuss future patterns of management tools use in catching up countries, with an emphasis on experiences from two former transition economics – Slovenia and Croatia. An overview of the literature about well-known and most used management tools reveals that discussions dealing with single management tools are often focused on a special theme and specific purpose according to the circumstances of discussion [14], [24], [32], [42], [43]. From the viewpoint of linkage between current and future use of management tools, there is no equivalent or similar approach in the literature.

Our findings about the impact of current use (in terms of experiences) on future management tools use are in line with general cognitions in literature that previous experiences (e.g., with use, observations) importantly influence future behavior (e.g., future use) [22], [46], as well as with cognitions that co-workers' previous experiences (e.g., with use) can influence other co-workers' decisions about their future behavior (e.g., future use) [3], [5], [9], [34].

The relation between the share of satisfied users and future intentions to use management tools do not reveal an important association in Slovenia and Croatia. Generally looking, the impact of satisfied users on future management tools use is insignificant. More specifically, for the Slovenian sample, it is evident that the impact of the percentage of satisfied users on future management tools is positive, weak, and insignificant, while inversely in the Croatian organizations the impact is negative, and also very weak and insignificant. Also, the literature offers very little empirical evidence about the impact of satisfaction on future use [22], [46], since in the forefront of this field of researching are experiences with use, observations, and recommendations [3], [9].

It is evident that, based on current management tools use and the percentage of satisfied users, the proposed model explains a relatively higher percentage of the variance in employees' desire to become familiar with single management tools (i.e. 40% for Slovenia and 11% for Croatia) than the variance in employees' desire to use management tools (i.e. 30% and 0%, respectively). The explanation power is significantly greater for the Slovenian than the Croatian sample. More precisely, testing the proposed model revealed that current management tools use more importantly influence future tools use (i.e., the desire to use and become familiar with management tools) than the percentage of satisfied users.

Further results reveal that the impact of current management tools use on future use (i.e. on the desire to use tools for those employees who already know management tools and the desire to become familiar with management tools for those employees who do not know management tools) is stronger than the impact of satisfaction with management tools. Thus, current management tools use importantly determines the future use of tools by others (i.e. those who have not used or know management tools until recently).

Future use or desire to experience, are dependent upon a synergetic set of (1) rational and irrational, (2) organizational and personal, and (3) external and internal factors [5], [13], [37], [41], [50]. The majority of these factors do not appear in our proposed model due to their complexity and extent of research. Including two possible factors, current management tools use and the percentage of satisfied users, it is revealed that they have a jointly and relatively good explanation power regarding the future use of management tools through the perspective of the desire to use management tools and become familiar with them.

Our findings are in line with findings from general management literature that supported the theory that others' experiences, recommendations, and observations could influence future decisions regarding using, participating, and motivation for use, etc. [17], [20], [53]. In organizations, these are also important behavioral signals from management (e.g., role model for other employees) [9]. Our findings are also in line with similar findings from the marketing field (e.g., previous shopping experiences) [22], [46]. Similar examples are also known from the education practice, like the influence of students' experiences with single classes to influence the choices of future students through recommendations.

It can be summarized that the use and knowing of management tools among employees in Slovenian and Croatian organizations is at a very similar level. Differences are related to the priorities about use of single management tools. Among the most used tools, employees

in both countries significantly and differently use (especially) outsourcing, mission and vision statements, knowledge management, total quality management, and customer segmentation. Conversely, some new tools, like corporate blogs, radio frequency identification, and customer ethnography, are more intensively used in catching up countries than in high-developed societies [12], [41].

In catching up countries (e.g., especially in former transition countries), management tools supporting establishing competitive (e.g., modern, innovative) organizational design are in the forefront in order to be more competitive [6], [26], [33], [38], [56]. Conversely, in organizations in high-developed economies, management tools are aimed at supporting activities related to increase customer satisfaction [27], [45], [48], [49].

Outsourcing has been at the forefront of almost every organizational restructuring during the 1980s in organizations operating in high-developed countries [21], while nowadays it lags behind tools aimed at supporting customer satisfaction [27], [49], clear long-term development, and competitive comparing [24], [49]. In the studied catching up countries, this tool is among the top used; in Slovenia, it is a top-used tool and in Croatia, it is ranked sixth.

Strategic planning has been among one of the top used tools since its appearance in the mid-1960s [36] by organizations in high-developed countries [49]. But on the other hand, having strategic planning in both studied countries as 8th ranked indicates a lack of long-term planning and orientation, but a focus of organizational management on short-term gains (e.g., solving current problems).

Total quality management had been in the beginning of the 1990s considered an important source of competitive advantage [42] and frequently used in organizations in high-developed economies [40]. Nowadays, in high-developed organizations, tools aiming to support customer care are in the forefront, while total quality management is not ranked among the top 15 tools [49]. Meanwhile, in studied transition countries, this tool is ranked fifth in Slovenia and ninth in Croatia, indicating again a great need for optimization of all organizational processes. Also, it is evident from another catching up country, Tunisia, that TQM could importantly improve the performance of studied manufacturing organizations [59].

Further, it is seen in organizations in catching up countries that a substantial need to acquire and disseminate knowledge is emphasized due to the importance of knowledge to build a modern, innovative organization [4]. In former transition economies, knowledge management is perceived as an important tool for increasing the competitiveness of organizations and the enhancement of business processes [6], [44], [56]. In that framework [33], for example, knowledge management is characterized as a tool that will importantly determine the near future of Czech organizations. In high-developed societies, knowledge management is currently not among the top 10 used management tools [49].

Comparing different regions, in catching up countries it is evident there is a substantial lack of focus on customer service, which is of huge importance in nowadays economics in order to fulfill heightening needs of customers [27]. Poor consideration of various tools regarding satisfying customers in former transition economies has its roots in formerly self-sufficient (e.g. central planned) economics systems where no concurrent pressures were present. This tradition has been staying in organizations since the transition process began [26], [29], [30].

Giving priority to management tools aiming to support optimization of organizations in catching up economies (e.g. former transition organizations) clearly indicates the need for substantial organizational transformation in organizations in these economies [12], [29], [30], [37], [38]. This reveals a lag of former transitional organizations behind those in most developed societies where all forces are targeted toward increasing customer satisfaction [49]. This allows us to conclude that organizations in transitional economies have not yet completely finished their reorganization processes in order to become more competitive [29], [30].

In the near future, we can expect that the pattern of management tools use in catching up countries will become much like those patterns from well-developed market economies. This assumption is based on our findings that the current use of management tools influences their future use. But also high-developed economies will make progress. Will there still be the same tools at the pedestal? If not, then catching up economies will (again) be lagging behind.

Conclusion

The proposed model for predicting future management tools use based on the information-perception-action link and theory of planned behavior presupposes that the impact of current management tools use will positively influence their future use by employees in organizations. This paper's results revealed that current management tools use has a positive influence on their future use, while the impact of the current percentage of satisfied users with management tools on their future use is very weak. Those findings are supported with results from the Slovenian sample, while in majority are not supported with results from the Croatian sample. Management tools use among employees in Slovenian and Croatian organizations is at a very similar level, while differences are related to the priorities about use of single management tools. A comparison of actual state management tools use in catching up countries and high-developed economies reveals different priorities in using management tools. In high-developed economies, tools aimed to support customer satisfaction are in the forefront, whereas in catching up countries (studied are two former transitional economies) tools aimed at supporting optimization processes in organizations are in the forefront. This is an indicator that organizations in former transition economies have not yet finished their reorganization triggered by the transition process in order to become highly competitive. Based on our findings that the current use of management tools influences their future use, we can assume that a pattern of management tools use in catching up countries will become like those in high-developed economies. The next step in further research could be testing the model for single management tools in two studies of countries. Further, the model and comparison pattern of management tool use could be carried out in other countries.

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Abstract

CURRENT AND FUTURE USE OF MANAGEMENT TOOLS

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This paper examines the use of management tools among Slovenian and Croatian employees, with the main focus on linkages between the current use of management tools and patterns of its future use. The authors developed and tested a model for predicting the future use of management tools based on the current use of tools by employees in organizations, underlying assumptions of the theory of planned behavior and the information-perception-behavior link. Descriptive statistics suggest that there are differences in management tools use patterns among Slovenian and Croatian employees. Among the most used tools, employees in both countries significantly and differently use (especially) outsourcing, mission and vision statements, knowledge management, total quality management, and customer segmentation. Using structural equation modeling for testing the proposed relations in the developed model on samples of Slovenian and Croatian employees reveals that the current use of tools plays an important role in predicting the future use of tools in Slovenian organizations, while linkages for the Croatian sample are rather insignificant. More specifically, the current use of management tools has a positive influence on the future use of management tools, while the impact of the current percentage of satisfied users with management tools is very weak. Further, a comparison of results with international data reveals differences in the patterns of management tools use between former catching up countries (studied are two former transition economies) and economies with a longer tradition in the market economy. Based on the current state of management tools use, linkages between their current and future use, and patterns of tools use in high-developed economies, the authors speculate about the future pattern of management tools use in catching up countries based on experiences from high-developed market economies. Those assumptions represent a building block for boosting the use of management tools in organizations in catching up economies, and thus helping those organizations to reduce the gap between them and most developed organizations.

Key Words: *Croatia, current use, future use, management tools, perception, planned behavior, Slovenia, pattern of use.*

JEL Classification*: D23, M10.*

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A COMPARISON OF LOCATION FACTORS EVALUATION IN THE SECONDARY AND TERTIARY SECTORS

Eliška Jirásková

Introduction

Assessment of location factors cannot be considered stable either from the point of view of time, or that of particular economic sectors. [4], [15], [17] However, it is possible to define economic sectors which can be considered as demanding a large amount of space in terms of location factors and economic sectors which are spatially neutral. Thanks to the significant instability in evaluation of localization factors a goal of this article is to find a possible conformity at least in an approach to the localization in individual examined economical branches. Proving this conformity could be helpful especially when processing competitiveness of a region and for attracting economical subjects of examined sectors. The examined sectors are only secondary and tertiary sectors because these sectors are considered as the main power of the economy nowadays.

The first part of the paper describes the theoretical background related to localization of industry and services, proceding from the oldest theories to the latest ones. Furthermore, attention is paid to the most important location factors which influence economic entities. Since the data are based on primary research, more attention is focused on the research course. The selection of respondents is explained, followed by their characteristics and the process of the data collection. Finally, the following hypothesis is verified by means of regression analysis:

The evaluation of particular factors by industrial entities and service entities can be considered identical.

1. Theoretical Background to Assess the Location Theories

From the point of view of location factors it can be stated that theories specific to particular sectors were the first to emerge during the 19th and at the beginning of the 20th century. At first, they focused on agriculture [41] and next on industry [33], [35], [22] and services [13]. Localization theory itself started to take shape during the first industrial revolution when the primary purpose in the process of locating an industrial plant was the maximum reduction in transport costs. The location factor of Alfred Weber [42] is considered the most important work on industry and a creator of a comprehensive classical theory. This theory assumes that entrepreneurs decide to locate their plants in such places where they have the lowest production costs, but the concept presented by reducing distances cannot be, because of globalization, considered as fully valid at this time.

Weber's work concerning industrial location factors was further developed for example by Engländer [7] who emphasized the factor of goods demand and goods supply or by Edgar Hoover (1948) who sought to find higher profit in the localization process in „connecting" industrial plants to basic production activities of a particular geographic area. Yet these two theories are thought to be current. The demand and interconnection of production activities in one area can, at present, be seen especially in large industrial enterprises. As an example, the automotive industry could be mentioned. Conversely, there could be registered a decrease in the importance of Weber's microeconomic criteria, which are resources at labour market. [14]

Another important milestone in industrial location factors was the opening of economies. Reduction of transport costs, globalizing environment and structural changes of economy from the primary sector to the secondary and subsequently to the tertiary sector are related to the change of the importance of the particular

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location factors and to the change of space costs. The theory known as **sector base theory** is based on these development changes in the composition of economic activities. This theory shows that primary sector growth is typical for the first stage of the region's development and is followed by the growth of the manufacturing industry. Not only does this cause growth in production, but also workforce productivity and workforce migration, which leads in turn to changes in workforce and capital allocation and to a transfer of these production factors from one economic sector to another one. Unemployment in the tertiary, or eventually in the quaternary sectors may become a criterion of the level of development of the region in question.

For this reason, it is not possible to consider the approach to industry location factors as identical to the approach to service location factors. The **central place theory** (CPT) by Christaller [13] is regarded as the most important service location theory. It explains spatial organization of the economy as a whole. A simplified premise of this theory is an area where there are no natural or other barriers. Even though Christaller's ideal model, where clients and company owners behave rationally and where natural resources as well as consumers are equally distributed in space, does not exist in reality, this theory has its practical importance and it is used, for example, by Mori, Nishikimi and Smith [29] for industry location factors. Sombart (1934) also dealt with service location factors. In his theory, he divided cities into two basic groups of internally oriented and externally oriented cities. The first group focuses on providing services especially to their own residents. The production of externally oriented cities focuses not only on their own residents, but also on services provided for their surroundings. According to Coffey and Polèse, [3] there are three main factors of service localization:

- a highly skilled workforce;
- additional services;
- costs related to delivery to the market.

Dunning [6] and Krugman [20] with their **new economic geography** belong to the representatives of the newer location theories. This theory has been developed by several other economists and geographers. [9], [25] Unfortunately, the new economic geography is not able to explain where particular industries will occur and why they occur in some specific areas more often than in some others. This issue is the subject of many studies primarily on the regional basis. Furthermore, there appears an effort to explain the localization placement process regardless of the economic sector.

1.1 Theoretical Bases of Location Factors

A location factor means cost economies carried out by a company due to appropriate spatial perception and it is thus seen as a competitive advantage. The fundamental aim of location theories is to define location factors and, given the rational behaviour of economic entities, to determine their optimal space distribution. Decision-making is, however, often based on routine decisions rather than on rational decisions and the behaviour of economic entities is not always based on profit maximalization. [30] A major reason for choosing the so-called **satisfactory variant** is also the fact that traditional location factors (transport and workforce costs) are constantly losing their importance and their influence on localization decision-making is weakening significantly. [27]

There is no general overview of location factors classification. For example the concept of location factors classification is their division into **soft and hard** is at this time often used. Hard factors are those which influence regional dispositions for a particular economic activity and they also have a direct impact on the net profit of a particular economic entity. Soft factors in the scope of this theory are those whose impact on economic outputs is not directly measurable, which means that they do not accrue in the accounts. [34] These factors have recently become increasingly significant and they are attributed to the increasing importance of the process of localization choice. [42] The main advantage of these factors is that they get closer to current trends in economic development. On the other hand, their main disadvantage is the fact that it is very difficult and sometimes nearly impossible to measure them.

Since there are many approaches to localization the list of classification from which the final selection came is due to better clarity categorized in Tab. 1.

Tab. 1: The typology of localization factors

Author	Type of LF	Examples of LF
Ponikelský [32]	General	Location, infrastructure, environment
Starzycná [36]	General	Ditto as Ponikelský + human resources, brownfields.
Wokoun [43]	Regional development	Ditto as Starzycná + intangible factors, Residential Structure
Grabow a Hollbach-Grömig [10]	Soft business and individual and hard	The soft could be important without becoming hard ones.
		Hard – availability by qualified human resources, areas, transport infrastructure.
		Soft business – are immeasurable, because they depend on a subjective evaluation of the businessman.
		Soft individual – matter of personal preferences of management and employees.
Own summary	International	Political-economic environment, exchange rate regime, social empathy, favoured credit terms.
Lösch [23]	Macroeconomic	Market size, transport costs.
Viturka [39]	Microeconomic	Market, technological, regulatory, competitive and geographical.

Source: own

26 current location factors been examined in the scope of empirical research. These factors were selected from different types of groups in which it was possible to presume some importance in the scope of examined economical entities. The selection of the examined localization factors was based on literature research and to a final selection the factors which suppose to have the biggest influence on not only economical subjects but even more on economical subjects in a industrial sector and in services were chosen.

For greater clarity, selected factors were divided into 4 groups. In these groups, individual factors can be further divided into several subgroups. In general, microeconomic location factors are primarily concern. However, some attention is paid to some macroeconomic factors because of their complexity and presumed influence. For greater clarity, the examined factors were recorded into a clearly arranged diagram, see Tab. 2.

2. Empirical Research Methodology of Location Factors for Small and Medium Enterprises

The examined location factors were chosen on the basis of a review of literature, with particular emphasis being placed on the important location factors of small and medium-sized enterprises based in the Czech Republic. [16], [19] The primary sector was completely eliminated from the examination, as it is not influenced by the examined factors and it is very complicated to reach selected respondents. Another reason not to include the primary sector in the research is the reduction of the share of agricultural activities in GDP, especially in favour of the tertiary sector. In the research there were included 13 economic sections with the following characteristics:

- the factors that are affecting them;
- the possibilities to reach them;
- the decisions for their localization.

The sorting of the research features was conducted according to the classification CZ-NACE and for the final research there were selected 13 sections, of which a total of 455 companies were addressed with the questionnaire. There was no expectation of 100% interest in the questionnaires. Thus in each section, 35 small and medium sized companies were responded, out of which 22% were from the secondary and 78% from the tertiary sector. This corresponds roughly with the share of GDP in the Czech Republic because in 2010 the service sector participated

Tab. 2: An overview of examined location factors

Regional and local	
Soft	**Hard**
Tradition and history of the site Quality and attractiveness of the area City background Availability of information and communication technology Economic situation of the region Image of the region Leisure opportunities Cooperation with state administration Quality of job centres Presence of foreign companies Availability and quality of research centres	Level of taxes and fees Availability of office and non-residential premises Prices of areas and buildings Environmental requirements, conditions and standards
Business	
Geographical proximity	**Other**
- of clients - of competing companies - of suppliers	Availability of additional services Possible cooperation with competing enterprises Proximity plants belonging to the same company

Work-related		
Soft	**Hard non-cost**	**Hard cost-related**
Mentality of the staff	Availability of qualified human resources	Workforce cost

Infrastructural	
Non-cost	**Cost-related**
State of transport infrastructure	Shipping costs

Source: own

in the creation of GDP with about 61%. [5] So we can see a clear dominance of the tertiary sector. [12] It could be said that in the Czech Republic there are generally fewer industrial companies than services and because the respondents were selected by random sampling, the primary goal was not the equal representation of both sectors. As it was said previously, 13 economic sectors were ranked into the research. The following 3 sections of the industry sector were addressed:

- water supply, services connected to wastewater and waste processing and remediation;
- manufacturing;
- construction.

The following 10 sections of the service sector were addressed:

- administrative and supportive activities;
- transport and storage;
- information and communication activities;
- real estate activities;
- other activities;
- finance and insurance;
- professional, scientific and technical activities;
- accommodation, catering and hospitality industry;
- wholesale and retail business;
- education.

The changing industrial structure of the economy can be considered as one of the drives

of the competitiveness in the region. According to Viturka [40], the explanatory power of the existing studies on the impact of the sector structure of the state in the region is only partial. It is not possible to confirm that the services are usually less concentrated than the industry. [37], [45] The processes of the changes in economy lead to the changes in the workforce, capital allocation and to the transfer of the production factors from one sector to another. The paper also summarizes which location factors play the biggest role in the location of services in particular and which others are important for industrial production enterprises.

Questionnaires were chosen as the most appropriate technique for conducting empirical research in the scope of the research described. First of all questionnaires were sent electronically to respondents. The contacted respondents were asked which of the above mentioned location factors are important for their localization, in relation to the type of their economic activity. Due to the small number of questionnaires which were returned, frequent e-mail delivery failures and occasional lack of electronic communication, the electronic survey was completed by phone interviews. A scale of 1 to 5 points was chosen for the questionnaire inquiry (with 1 point equalling absolutely unimportant, 2 = rather unimportant, 3 = neither important, nor unimportant, 4 = rather important, 5 = absolutely important), and the so-called zero point was also taken into account. This method of questioning allowed easier processing of the results obtained.

3. Importance of the Examined Factors in Terms of Sectors

There are a number of studies focused on location factors of industrial enterprises. [21], [28] Due to fatal consequences associated with a failure in localization of industrial enterprises and with significant costs connected with eventual change of location, it was assumed that greater importance of individual location factors will be proved in secondary sector enterprises. This assumption was confirmed, as half of the examined factors was evaluated as more important in industrial enterprises. Unlike the tertiary sector enterprises, the industrial enterprises put more emphasis especially on the following criteria:

- tradition and history of the site;
- availability and quality of research centres;
- cooperation with state administration;
- quality of job centres;
- level of taxes and fees;
- environmental requirements, conditions and standards;
- geographic proximity of suppliers;
- availability of additional services;
- possible cooperation with competing enterprises;
- proximity of a plant belonging to the same company;
- qualified human resources;
- state of transport infrastructure;
- shipping costs.

Based on the research results, we may also define four location factors which do not play a significant role in case of industrial enterprises and which are taken into account only in the location process of economic entities providing their clients with services. These include:

- availability of information and communication technology;
- image of the region;
- leisure opportunities;
- workforce cost.

4. Verification of Assessment Conformity

Simple linear regression was used to describe dependencies among individual sectors. The mutual dependence of the assessment of location factors of the enterprises belonging to the secondary and the tertiary sectors was assessed due to the above mentioned simple linear regression. The initial regression model was the usual form (1) for which the variable Y equals to factor assessment by tertiary sector enterprises, X to factor assessment by secondary sector enterprises, β_1 corresponded to direction and regression quotient expressing dependence of the change of value of Y in case X is changes, β_0 absolute parameter or quotient and the last part of it is a random variable.

$$Y = \beta_0 + \beta_1 X + \varepsilon \quad (1)$$

The following hypotheses were tested in the first stage:

H_0: The selected functional relationship between dependent and independent variable does not exist.

H_1: The selected functional relationship between dependent and independent variable exists.

The statistical importance of individual

regression parameters was also tested. In particular it concerns the verification of the importance of direction and quotient. Given that the hypothesis claiming that it is possible to consider the β_0 quotient to be statistically unimportant was verified at the 5% significance level, then it is possible to modify the regression model to the form (2):

$$Y = \beta_1 X + \varepsilon \quad (2)$$

and to verify again the following hypothesis, based on the equation without a constant:

H_0: The selected functional relationship between dependent and independent variable does not exist.

H_1: The selected functional relationship between dependent and independent variable exists.

This is followed by the hypothesis on statistical importance of the direction of the β_1 parameter and the hypothesis concerning assessment conformity between enterprises belonging to individual sectors was tested in the final stage, given that if it is possible to consider individual assessments to be identical, null hypothesis rejection must not occur.

In case of statistical importance of individual parameters, it is possible to define the region of acceptance as *W* (3) with the test criterion *T* (4).

$$W = \{T: |T| \geq t_{1-\frac{\alpha}{2}} (n-1)\} \quad (3)$$

$$T = \frac{b-\beta}{s} * \sqrt{\sum x_i^2} \quad (4)$$

If the test criterion is not included in the region of acceptance, we do not reject the null hypothesis and **the assumption** that $\beta_1 = 1$ **has been confirmed** and **individual assessments may be considered to be identical in the scope of both examined sectors.**

For greater clarity, the conformity assessment of both examined sectors will be described for working factors only, hypotheses having been verified analogically also for the other three groups of factors.

Tab. 3: Regression analysis for the group of working location factors in the model with a constant

Parameter	Estimation	Test criterion T	Critical region	P-Value
Parameter β1 : b1 estimation	1.162	22.422	2.770	0.000
Parameter β0 : b0 estimation	-7.375	-2.738	2.770	0.052
	Test criterion F	**Critical region W**	**P-Value**	
Variance analysis	502.77	7.71	0.000	

Source: own

Tab. 3 shows the existence of a functional dependency between dependent and independent variables, as for variance analysis the P-Value = 0.000 and the critical region W = {F: F ≥ F (1.4) => 502.77 ≥ 7.71). We can therefore reject the H_0 hypothesis: *The selected functional relationship between dependent and independent variable does not exist,* and at the same time, we do accept H_1 hypothesis: *The selected functional relationship between dependent and independent variable exists.*

The statistical importance of individual regression parameters was also tested, and its results allow us to state that, unlike the β_1 parameter, the β_0 parameter is not statistically important and the regression function can thus be transformed into the model without a constant and the tested hypotheses for this model may be repeated, see Table 3.

The values listed in Tab. 4 for the variance analysis show that we reject the H_0 hypothesis and we do not reject the H_1 hypothesis, and there is a statistically important relationship between the analysed variables. Tab. 4 also shows an evident statistical importance of the β_1 direction in the scope of which we reject the H_0 hypothesis.

The last step to be made in order to verify conformity of individual assessments by means of the following hypothesis:

Tab. 4: Regression analysis for the group of working location factors in the model without a constant

b1 parameter	Estimation	Test criterion T	Critical region	P-Value
Parameter β1 : b1 estimation	1.037	27.332	2.57	0
	Test criterion F	**Critical region W**	**P-Value**	
Variance analysis	747.04	6.610	0	

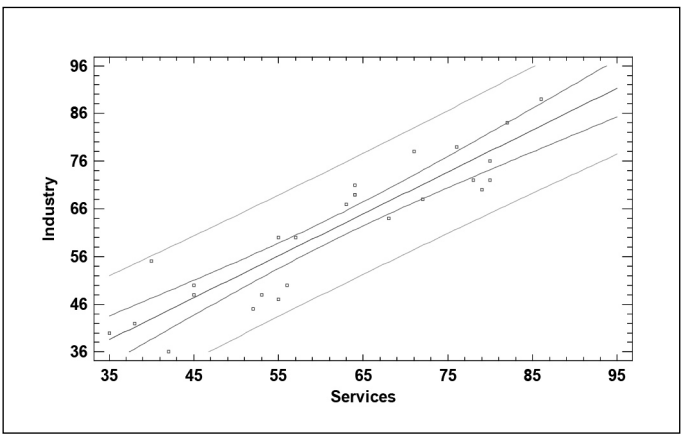
Source: own

H_0: $\beta_1 = 1$
H_1: $\beta_1 \neq 1$,
with the test criterion T:

$$T = \{ (1.037 - 1) / 4.833 \} * \sqrt{\sum x}\ 16203 = 0.996,$$

and the critical region $W = \{ T: |T| = 0.996 \geq t_{1-\frac{\alpha}{2}} (5) = 2.57 \}$. As T is not an element of W, we do not reject the H_0 hypothesis and it is possible to consider the assessment of individual sectors to be identical in the scope of working factors. The same procedure was also applied to the other groups of factors, which show that **enterprise assessments in the secondary sector and those in the tertiary sectors can be considered identical in terms of all groups of location factors. Figure 1 shows a graphical representation of the regression function for regional and local factors.**

Fig. 1: Regression fuction for regional and local factors



Source: own

Discussion

Location factors cannot be taken as universal from perspective of individual sectors of the national economy. The research results prove an clear increase in the emphasis that is being placed on location factors in case of industrial enterprises whose costs associated to the change of localization are considerably higher that in the case of localization of services. Both sector may, nevertheless, expect the influence of the behaviour imitation of other economic entities. [1] In a case of services as well as in industry was found a sameness of the examined localization factors. Practically it means that even though localization factors are evaluated as more important by industrial enterprises from the view of the sectors of national economy is possible to consider the evaluation identical. The results of the research could be helpful in the preparation of a regional

strategy of a development of the business environment in the regions of the Czech republic which could better accentuate factors influencing the choice of place of business of subjects which the region wants to attract in. It is clear that not only big industrial enterprises but also economical subjects providing services consider their localization.

Generally speaking, the location factors of industries and business services are largely influenced by modern technologies which have changed the importance of these location factors. Especially in the tertiary sector, the proximity to customers is not so important anymore [44] and, also, this factor can be now considered as consistently rated within the two studied sectors. It should also be noted that both sectors play the key role in the development of the region and in the regional economic growth, [8], [2], [11], [26] which often corresponds with the cultural dimensions, infrastructure [38] and other location factors.

Location theories constantly change, evolve and reveal new factors. Initial location theories aimed to reveal location factors which were important for agriculture. Another stage of the development of these theories was the development of industry and the change of perception of the need to choose appropriate localization connected to it. In terms of sectoral structural change to the national economy, the last change came with the rapid increase of the tertiary sector. Technological progress also has a major influence on the incessant development of location factors. Shipping costs may be cited as an example. Since Weber's times, their importance has been gradually decreasing in terms of their influence on localization-related decision-making. [24] It can be expected that further advance in perception of existing localization factors will take place in the future. Because of it this topic is considered as constantly actual and it is vital to continue to examine it and evaluate it. Besides long known localization factors it is important to consider new localization factors which form thanks to technological progress and to comparison of them in a long therm.

The change in the approach to localization is, of course, also caused by other external influences. Examples of this are the constantly changing business environment, increasingly open character of the market and changes in the behaviour of customers. Underestimating external influences and the localization stage may have fatal consequences for the future development of the given economic entity. Several recent studies confirmed the fact that a correct localization may be a determining factor for competitiveness of the given economic entity. [18]

Conclusion

The described research dealt with the evaluation of selected current location factors in the individual economical activities of the secondary and the tertiary sectors. The first part of this paper was focused on the review of location theories related to secondary and tertiary sector. From this review 26 location factor were chosen, divided into 4 groups – **regional and local factor, business factors, work-reletad and infrastructural factors** – and examined. It was assumed that greater importance of individual location factors will be proved in secondary sector enteprises, due to the significant costs connected with the eventual change of location. This assumption was confirmed, because in term of average evaluation the industrial enterprises evaluated a half of examined particular factors as more important than the service enterprises did. Mainly it is:

- availability of additional services;
- possible cooperation with competing enterprises;
- qualified human resources;
- state of transport infrastructure;
- shipping costs.

Although some examined location factors can be considered as more important for industrial enterprises in term of average value after their summarization in the same topical groups, it is not possible to reject the hypothesis: **The evaluation of particular factors by industrial entities and service entities can be considered identical.** We can state that every individual evaluation can be considered as very similar in term of examined groups. Results can be considered proven, since about 450 survey respondents from the Czech Republic were selected by random selection with great feedback return questionnaires. A representation of individual enterprises corresponded with the structure of national economy of the Czech Republic.

The research shows that general understanding of local factors can be considerd

as very close for the economic entity of the two biggest sectors of the national economy, in spite of the fact that everage value of individual examined factors indicate their bigger importance for industrial enterprises in the individual cases.

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Abstract

A COMPARISON OF LOCATION FACTORS EVALUATION IN THE SECONDARY AND TERTIARY SECTORS

Eliška Jirásková

The paper deals with the evaluation of selected current location factors in the individual economical activities of the secondary and the tertiary sectors. These two sectors were chosen because of the increasing importance of appropriate localization and huge costs associated with its change. A review of literature on location theories related to both examined sectors is carried out in the first part of the paper. In the scope of this review, a brief description of location factors can be found. It is followed by a diagram of chosen location factors. 26 factors were divided into four groups – local, business, workforce and infrastructural factors. This classification is used for a better and clearer understanding of the chosen factors. The following part of the paper contains a description of the research methodology, including the appropriate choice of investigative method and a detailed characteristics of chosen respondents. As well as the primary sector, large enterprises were eliminated, as focusing described research to very small, small and medium-sized enterprises is much easier and, in case of SME, it is also possible to presume a stronger emphasis placed on the location factors under examination.

The aim of the paper is to verify by means of regression analysis whether the assessment of both sectors can be considered identical. This hypothesis was confirmed in all examined groups and therefore it is not possible to presume a different perception of location factors in the case of industrial enterprises in comparison to enterprises providing services.

Key Words: *Location factors, regresion analysis, secondary and tertiary sector.*

JEL Classification: *C12, R10, R53.*

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CHANGES OF EMPLOYEE MOTIVATION OF SLOVAK ENTERPRISES DUE TO GLOBAL ECONOMIC CRISIS

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Introduction

The year 2008 can be considered the beginning of the economic crisis in Slovakia when we really started to feel the pressure of the financial crisis. However, hardly anybody expected it to have such substantial impact not only on the Slovak but also on the global economy. Interaction among countries, globalisation and international relations caused a domino effect. The economic crisis can also initiate some optimisation and organisational restructuring in enterprises. At the present time a massive downsizing occurs and many companies even stop their activities. In several enterprises, after organisational restructuring and downsizing, a problem with motivation of remaining employees occurs – how to motivate them without increasing the expenses. The best way is to start using other forms of motivation and investing in development of remaining employees. The aim of the paper is to compare the changes in levels of motivation in Slovakia before the economic crisis and the current state, to define potential significant difference in level of motivation factors and subsequently to determine potential changes in levels of motivation factors that would cause the change of the enterprise motivational programme.

1. Employee Motivation During the Economic Crisis

The period of recession is a difficult period not only for employees but for employers, too. In a situation when the enterprise does not face the recession, the process of employee motivation is relatively simple. As the recession influences the workplace atmosphere, it is particularly difficult for each senior manager to increase employee motivation. However, if employees work with enthusiasm even during the time of recession, it can also indicate that the enterprise may recover from the recession faster and without any serious damage. Senior managers should not forget the fact that their employees are influenced also by the way they communicate with them or by the body language. All superiors who have more power, responsibility and competences should be able to motivate their team and subordinates also at the time when the first impact of the recession occurs in the enterprise [21]. When the first impact of the economic crisis occurs in the enterprise, most of traditional methods of motivation applied by the management before this time cannot be carried out. Various incentives, extra holidays, corporate entertaining and rewards which are the most commonly used tools of motivation, seem to be less important in the atmosphere of insecurity. During the recession employees lose mainly the sense of security. This situation is very stressful for employees and consequently it affects the quality and employee productivity in a negative way [5], [15]. Some methods can be used to manage the period of crisis by means of non-monetary rewards of employees – to restructure teams, arrange educational activities in the enterprise, train employees, offer language and IT courses, management training, professional courses, seminars and trainings furthermore to benefit by several outsourcing tools of the market [17].

If the enterprise wants to keep employee productivity and their willingness to work it is appropriate to offer them motivational programme that makes them feel important for the enterprise [14].

According to the authors [4], [13], [20], [22] other ways and types of motivation applied during the economic crisis can be differentiated:

- *Creating teams* – building teams is a big step towards motivation that integrates all powers in the fight against barriers the

enterprise is facing. The implementation of activities to increase skills in team building and team approach to work can be a way of motivation.

- *Developing communication skills within a team* – employee motivation starts with effective communication among individual team members. Lack of team support and coordination decreases motivation and creates tensions. Acquaintance and communication help overcome barriers and keep the team together in difficult times.
- *Highlighting accomplishments* – next most commonly used way of motivation that supports employee motivation is highlighting big and small accomplishments of the team.
- *Interaction with senior management, key suppliers and customers* – employee motivation should also include building strong relationship with senior management through consideration of proposals of ordinary employees and through modifying regulations as well. Motivation should create friendly approach and better proposals to solve crisis situations. Motivation is considered the key tool and the interaction extended by experience that makes solution to difficult situations easier.
- *Acceptance of new ideas* – employees have a feeling of togetherness, of contribution to the success of the organisation. Team leaders should take ideas of their subordinates into account.
- *Harmonisation, new strategies and new trends* – cooperation focusing on positive goals, progress and following the strategies of solution to crisis situations set up in advance support motivation most. It supports factors of employee motivation and team building as well.

2. Motivational Programme as a Tool for Keeping Employee Productivity

Since the enterprise strategy includes the goal setting and a set of tools (measures and methods) for achieving that goal, several partial strategies specifying enterprise strategies in individual activity area (e.g. marketing, investment, product development, area of finance) are expected to be created in the context of the enterprise strategy. The aim of motivational strategies is to create the work environment and to develop policy and methods that improve employee productivity. It is very important for current employee motivation to keep right key persons working in the strategic job positions (especially those who are essential for running the enterprise). Therefore the implementation of successful motivational programmes in enterprises is considered significant. Motivational programme is, in general, a written document of the enterprise, (mostly internal) the role of which is to recruit new employees or to keep employees in required job positions and to create overall working conditions and working environment for them; to set goals and to define methods and tools of work management relating to them; to define ways of influencing negotiation at work and employee behaviour aimed at achieving the setting of goals and the schedule of gradually creating conditions to carry out the programme. Motivational programme can be considered a strategic corporate document dealing with:

- measuring motivation level in order to identify areas necessary to improve the motivation,
- creating environment where employees feel respected and rewarded by the enterprise,
- designing responsible and engaged employee behaviour in the enterprise,
- creating an empowering motivational climate in the enterprise,
- improving skills in the area of human resource management,
- designing operational tasks and new workplaces,
- managing employees` performance,
- managing the performance-based rewarding [2], [3].

When creating motivational programmes we must remember that intrinsic motivation at work is specific for each person. Therefore we define so-called motivation profile. This profile is a basic condition for creating a positive motivation. When creating motivational programme it is very useful to take into account certain rules, principles ensuring its greater responsibility, logicalness and lucidity [16]. In terms of time management the following steps need to be completed when arranging the programme.

The first step presents carrying out the analysis of motivational structure and the mood of employees in order to determine the employees' value orientation, their needs and the level of meeting their needs by means of sociological questionnaire focused on attitudes

towards stabilisation and motivation at work. We can use quantitative, qualitative or classification analyses, generalisation, etc. After assessing the results we find out the motivational structure of different employment categories and their significance.

In **the second step** the goals of motivational programme are set. They willl support general stability of employees in the area of stabilisation of key professions regarding current and especially future programme of production, stabilisation of skilled and hardworking employees, hiring new employees or completing the required number of employees according to the workplace planning and specification of the programme for different professional groups, management levels, etc. The results of this step of creating motivational programme are the proposals for monetary and non-monetary incentives and stimuli directly related to particular empoyees.

The third step represents the creation of the model of employment stabilisation including stimulating and motivation factors. This model includes the factors influencing stabilisation necessary for employee motivation to stay in the enterprise. Model statements, including principals and describing individual factors must be compared with reality. Factors that must be provided and those that must be solved in terms of stabilisation emerge from such comparison.

The fourth step can be described as the implementation of motivational programme. It is a specific process oriented towards employment stabilisation and the selection of ways, conditions and effective methods of stabilisation, defining methods to affect people, determining persons responsible for the implementation of motivational programme and the schedule of its fulfilling.

3. Methodology

Analyses of motivation in enterprises were carried out through questionnaire with structured questions. Employee attitudes concerning the issue and the basic database are presented on the basis of the responses obtained from the closed questions. Primary sample file is formed by employees of the enterprises (manufacturing and non-manufacturing) operating in the Slovak Republic. Considering the size of the sample file we could not analyse the motivation of each item of the basic sample. The random sampling was used to choose items from the basic sample. Selected sample consists of 7,724 employees. 1,118 employees participated in the research in 2008 and 6,606 employees (in different job position, mainly technical and administrative staff, and manufacturing staff) in 2013. Respondents evaluated individual motivation factors in the questionnaire (Tab. 1) by one of five levels of significance from a predefined rating scale (Tab. 2). Year 2008 was chosen as the starting point of the analyses since the level of motivation was not affected by the economic crisis. The reference period was the year 2013 when the crisis, on the basis of the macroeconomic indicators, continues.

The motivation questionnaire was created on the basis of the knowledge acquired through the long-term research [7] and through the communication with personnel clerks in the enterprises. Motivation factors that affect the employee productivity most were used in the questionnaire.

Questionnaire evaluation was carried out from the data matrix with *number of employees x number of motivation factors*. This matrix is a data entry form for carrying out the statistical analysis of motivation factors. Questionnaires were evaluated using programme STATISTICA 7 [12]. Basic statistical characteristics were calculated for each motivation factors. They reduced information about the property of basic survey samples to a smaller number of numerical characteristics and made mutual comparison of selected samples easier. Each motivation factor was described in summary by basic characteristics [18] such as size and variability of quantitative features – mean $\bar{x}$, standard deviations s_x ... Subsequently results of descriptive statistics of selected samples were compared. Besides simple comparison of descriptive characteristic values regarding the selective data collection were proceeded to the examination of equality of means and standard deviations of basic samples to prove statistical significance of differences in means and standard deviations of individual motivation factors of studied selected samples so that the fact that detected differences of descriptive characteristics at the selected level of significance α were not caused only by the mistake made from representative sampling was eliminated. Considering the independence of selected samples and their big sizes a two-sample t-test for independent samples at the same or different variances was used. The null hypotheses about the equality of two means

Tab. 1: List of analysed motivation factors

SN	Motivation factor	SN	Motivation factor
1	Atmosphere in the workplace	16	Prestige
2	Good work team	17	Supervisor's Approach
3	Further financial reward	18	Individual decision making
4	Physical effort at work	19	Self - actualization
5	Job security	20	Social benefits
6	Communication in the workplace	21	Fair appraisal system
7	Name of the company	22	Stress (limitation of stress in the workplace)
8	Opportunity to apply own ability	23	Mental effort
9	Workload and type of work	24	Mission of the company
10	Familiarisation with reached working results	25	Region's development
11	Working time	26	Education and personal growth
12	Working environment	27	Company relation to the environment
13	Employee productivity	28	Free time
14	Moving up corporate ladder	29	Recognition
15	Competences	30	Basic salary

Source: Own data processing

Tab. 2: Rating scale of an order of motivation factors according to their importance

5	4	3	2	1
the most important	very important	medium important	slightly important	unimportant

Source: [11, p. 149]

of selected samples were tested. The null hypothesis about the equality of average values of individual motivation factors was rejected at the significance level $\alpha = 0.05$.

Two-sample t-test was used to test the equality of means of motivation factors of two basic samples. When calculating t-test three cases depending upon the fact whether the variances of compared basic samples are equal or not $(s_1^2 = s_2^2, s_1^2 \neq s_2^2)$, or whether examined attributes X_1, X_2 are dependent or not can occur so the test of equality of variances, i.e. F-test had to be carried out at first. Following the results of F-test, the two-sample t-test for independent samples at the same or different variances was used. The null hypothesis vs. the alternative hypothesis was tested, they were as follows:

$$H_0 : \overline{x_1} = \overline{x_2} \quad \text{vs.} \quad H_1 : \overline{x_1} \neq \overline{x_2}$$

H_0: we suppose that the means of studied motivation factors in the first monitoring period are equal to means of examined motivation factors in the second monitoring period and, at the same time, we suppose that the difference between them, if there is any, is caused only by the random variation of results.

H_1: we suppose that the means of studied motivation factors in the first monitoring period are not equal to means of examined

motivation factors in the second monitoring period and, at the same time, we suppose that the difference between them, if there is any, is not caused only by the random variation of results.

The random variable *t* was used as a test criterion. The Student's *t* distribution was as follows:

- if $s_1^2 = s_2^2$; X_1 and X_2 are independent

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{n_1 \,.\, s_1^2 + n_2 \,.\, s_2^2}{n_1 + n_2 - 2} \cdot \frac{n_1 + n_2}{n_1 \,.\, n_2}}} \quad (1)$$

- if $s_1^2 \neq s_2^2$; X_1 and X_2 are independent

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1 - 1} + \frac{s_2^2}{n_2 - 1}}} \quad (2)$$

The variable F was used as a test criterion for the equality of variances and the Fisher F division was as follows: $F = \frac{s_1^2}{s_2^2}$. In the end of the test we evaluated the level of significance p. In a case that $p < \alpha = 0.05$, we reject the null hypothesis about the equality of means and variances.

4. Results

The Tab. 3 shows the order of the most important motivation factors and their means in 2008 and 2013. In the year 2008 factors relating to the relationship (atmosphere in the workplace, supervisor's approach, good work team, communication in the workplace) and job security took the leading positions and in the year 2013 factors like job security and financial incentives (basic salary and fair appraisal system) became more important. The importance of factors relating to the relationship (good work team, atmosphere in the workplace, supervisor's approach and communication in the workplace) decreased. Only 3 motivation factors (in 2008 employee productivity, name of the company, education and personal growth and in 2013 further financial reward, social benefits, working time), from 10 which are considered by employees to be the most important, changed the position during the examined period. We can point out that the motivation, in the area of changed motivation factors in 2008 and 2013, was influenced by changes in economic situation and employees were focused mainly on financial reward and social benefits.

Tab. 3: Order of the most important motivation factors in the years 2008 and 2013

SN	Before the year 2008	ø	2013	ø
1	Atmosphere in the workplace	4.18	Basic salary	4.55
2	Supervisor's Approach	4.16	Job security	4.45
3	Good work team	4.15	Good work team	4.43
4	Job security	4.15	Atmosphere in the workplace	4.41
5	Communication in the workplace	3.97	Fair appraisal system	4.39
6	Fair appraisal system	3.96	Supervisor's Approach	4.36
7	Basic salary	3.94	Further financial reward	4.33
8	Employee productivity	3.88	Communication in the workplace	4.26
9	Name of the company	3.88	Social benefits	4.17
10	Education and personal growth	3.88	Working time	4.15

Source: Own data processing

In terms of significance of individual motivation factors we can state that all motivation factors (besides name of the company) changed significantly at the level $\alpha < 0.001$, whereby we confirm the hypothesis H_1 (Tab. 4). In Tab. 4 we can see means of motivation factors in the year 2008 and 2013. The difference of means in the monitoring period is shown in the second column. The significant change in the monitoring period can be seen in the column *p.* All motivation factors, besides the factor *the name of the company,* are considered significant. From stated findings it is possible, but difficult, to predict the development of motivation, providing that we are familiar with external and internal economic conditions. It is evident also in our analyses.

Tab. 4: Means and the level of significance p for individual motivation factors (part 1)

	ø 2008	ø 2013	ø 2013- ø 2008	t-value	p	Std. Dev. 2008	Std. Dev. 2013	F-ratio Variances	p Variances
Atmosphere in the workplace	4.18	4.41	0.23	-8.87	0.00000	0.906	0.788	1.32	0.00000
Good work team	4.15	4.43	0.27	-10.90	0.00000	0.928	0.744	1.56	0.00000
Further financial reward	3.75	4.33	0.58	-20.41	0.00000	1.211	0.805	2.26	0.00000
Physical effort at work	3.41	3.81	0.40	-12.78	0.00000	1.022	0.949	1.16	0.00087
Job security	4.15	4.45	0.30	-11.50	0.00000	0.962	0.788	1.49	0.00000
Communication in the workplace	3.97	4.26	0.29	-10.78	0.00000	0.975	0.818	1.42	0.00000
Name of the company	3.88	3.80	-0.08	2.42	0.01545	0.977	1.071	1.20	0.00008
Opportunity to allow own ability	3.73	4.00	0.27	-9.30	0.00000	1.023	0.884	1.34	0.00000
Workload and type of work	3.70	4.04	0.34	-12.02	0.00000	1.029	0.844	1.49	0.00000
Familiarisation with reached working results	3.54	3.95	0.41	-13.49	0.00000	1.157	0.900	1.65	0.00000
Working time	3.85	4.15	0.30	-10.52	0.00000	1.020	0.862	1.40	0.00000
Working environment	3.81	4.13	0.31	-11.12	0.00000	1.003	0.851	1.39	0.00000
Employee productivity	3.88	4.09	0.21	-7.50	0.00000	0.947	0.859	1.21	0.00001
Moving up corporate ladder	3.80	4.00	0.20	-6.81	0.00000	1.039	0.891	1.36	0.00000
Competences	3.51	3.86	0.35	-11.24	0.00000	1.139	0.945	1.45	0.00000
Prestige	3.36	3.68	0.32	-9.64	0.00000	1.071	1.008	1.13	0.00719
Supervisor's Approach	4.16	4.36	0.21	-7.71	0.00000	0.905	0.810	1.25	0.00000
Individual decision making	3.65	3.98	0.33	-11.30	0.00000	1.018	0.885	1.32	0.00000
Self - actualization	3.68	3.97	0.29	-9.68	0.00000	1.046	0.887	1.39	0.00000
Social benefits	3.64	4.17	0.53	-17.43	0.00000	1.228	0.873	1.98	0.00000
Fair appraisal system	3.96	4.39	0.43	-14.92	0.00000	1.187	0.824	2.08	0.00000
Stress /limitation of stress in the workplace/	3.75	4.03	0.27	-8.88	0.00000	1.063	0.937	1.29	0.00000

Tab. 4: Means and the level of significance p for individual motivation factors (part 2)

	ø 2008	ø 2013	ø 2013-ø 2008	t-value	p	Std. Dev. 2008	Std. Dev. 2013	F-ratio Variances	p Variances
Mental effort	3.61	3.95	0.34	-10.86	0.00000	1.050	0.940	1.25	0.00000
Mission of the company	3.69	3.81	0.13	-3.86	0.00012	1.083	1.002	1.17	0.00055
Region's development	3.42	3.76	0.34	-9.66	0.00000	1.143	1.062	1.16	0.00109
Education and personal growth	3.88	3.99	0.11	-3.66	0.00025	1.112	0.937	1.41	0.00000
Company relation to the environment	3.74	3.87	0.13	-3.86	0.00011	1.044	1.028	1.03	0.48275
Free time	3.65	4.06	0.42	-13.18	0.00000	1.108	0.951	1.36	0.00000
Recognition	3.68	4.13	0.44	-14.94	0.00000	1.115	0.881	1.60	0.00000
Basic salary	3.94	4.55	0.61	-22.08	0.00000	1.210	0.779	2.41	0.00000

Note: n_1=1118, n_2=6606

Source: Own data processing

Conclusion

Within our actual analyses we can point out that employees need to stay motivated also from a long-term point of view (the research carried out in 2001–2011 by authors [9], [19], [6], [7], [8], [11], [10]). It is evident in the analyses in enterprises where the significant change of motivation occurred in a period of five years.

Following the performed analyses (statistical single factor analysis of variance and Duncan's test) we can define the difference in the level of motivation factors before the financial crisis and at the present time. Subsequently we can state that changes that happened were not caused by random effect or by action of some other significant effects. The economic crisis can be considered a significant factor causing changes in the employee motivation.

When analysing the employee motivation in the enterprises in Slovakia during the researched period we found out that among ten most important motivation factors there are following essential motivation factors: monetary incentives (basic salary, fair appraisal system, further financial reward), motivation factors based on the job security or human relationships (atmosphere in the workplace, good work team, supervisor's approach, communication in the workplace) and motivation factors based on working conditions (employee productivity, working time, working environment). At the present time we can observe significant changes of employee motivation in the Slovak enterprises before and during the financial crisis. That allows us to draw a conclusion that the level of motivation depends on microeconomic and macroeconomic aspects not only in an enterprise but also in a whole society.

We can also state that employees are fully aware of the importance of the job security in the period of recession and the fact that the society cannot offer them required financial reward. Therefore the enterprises should focus on the process of motivation especially by means of motivation factors based on human relationships and job security. Similar results were found out also by the author Irena Bakanauskiene in cooperation with Mindaugas Ubartas [1]. She concluded that, in the period of recession, employers tend to improve the process of employee motivation in enterprises and job dissatisfaction is decreasing on average, what is in accordance with individual factors differentiated in Maslow's hierarchy of needs. They also found out that the number of unaffected factors decreased and employees tend to improve working conditions through motivation. Detailed analysis of individual factors according to described groups allows us to suppose that during the time of economic crisis:

- the effect of motivation factors increased and employees consider them more motivating,

- the most important motivation factor became the success as well as recognition, personal growth and the job itself,
- employee dissatisfaction with the work control system and consequential variability of financial reward increased,
- the number of factors employees consider neutral in their job decreases and they accept that superiors should not pay attention to personal life of employees and relationship with subordinates,
- the significance of the employers' interest in needs of their employees relating to individual motivation factors as well as the appraisal system of employees, their security or working conditions increase.

Compared to the time before the beginning of the economic crisis following changes in individual groups of motivation factors were observed:

- the impact of recognition, responsibility and success increased,
- the dissatisfaction of employees increased in the areas of job control and financial reward.

There is another significant research finding. It is the fact that fair performance appraisal system in the enterprise is essential also in the time of the financial crisis because employee work results are closely related to it [1].

The result of the analysis carried out by the authors [13] is the finding that more and more enterprises focus on meeting the need of job security outlook which is one of the most important motivation factors at present.

In the period of recession it is very important to ensure job security and to build positive relationship among employees and this can be achieved through effective communication. However, employers do not pay enough attention to this need. The research shows that employers rarely allow employees to meet this need and it can demotivate them. The motivation factors – reward, recognition and employee engagement in problem solving process are also effective motivation factors themselves. The results of mentioned research confirm our findings.

During the time of the financial crisis it is necessary to think about motivation factors fwith focus on on building human relationships, job security, or factors concerning working conditions followed by financial motivation factors. Latter mentioned factor takes the leading position during the time of the enterprise recovery.

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Abstract

CHANGES OF EMPLOYEE MOTIVATION OF SLOVAK ENTERPRISES DUE TO GLOBAL ECONOMIC CRISIS

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Nowadays, at the time of economic globalisation and the European labour market formation, it is possible to carry out different analyses which enable comparsions among enterprises from the geopolitical, economical and commercial point of view. In the paper we compare the level of employee motivation in the Slovak enterprises before the beginning of the economic crisis in 2008 and in 2013 when the impact of the crisis has already been felt intensely. The year 2008 was chosen as the starting point of the analyses since the level the level of motivation was not affected by the economic crisis. The reference period was the year 2013 when the crisis, on the basis of the macroeconomic indicators, continues. Basic research sample is formed by employees of the enterprises (manufacturing and non-manufacturing) operating in the Slovak Republic. Considering the size of the basic sample we could not analyse the motivation of each item of the basic sample. The random sampling was used to choose items from the basic sample. The motivation questionnaire was created on the basis of the knowledge acquired through the long-term research and through the communication with personnel clerks in the enterprises. Motivation factors that affect the employee productivity the most were used in the questionnaire. Following the sizes of selected samples and their independence we used a two-sample t-test to determine the significance. The null hypothesis testing about equality of means of individual motivation factors in the particular period of time was carried out at the significance level α = 0.05. Following the results of analyses we state that employees need to stay motivated also from a long-term point of view. However, essential changes occur in order of importance. We can state that in the circumstances of changed motivation factors in the year 2008 and 2013 the motivation was affected by changes in economic situation and employees are focused on monetary incentives and relationship factors more.

Key Words: *Motivation, motivational programme, change of motivation, economic crisis, two-sample t-test, Duncan's test.*

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THE INFLUENCE OF ORGANIZATIONAL VALUES ON COMPETENCIES OF MANAGERS

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Introduction

Understanding the meaning of organizational values and their influence on employee performance is becoming more and more important. Several psychologists [51], [53], [30], have been researching values for decades, both at individual and at organizational level. There is also a view [35] of organizational values that argues that just as any human community has its own value system the same is true for any organization. Taking that into account, we are facing a dilemma, whether [16] organizational values are something that emerges from an organization or are they simply transferred from an individual level to the organizational level by its employees. It is very likely that organizational values develop through a mixture [16] of both. Thus, at the beginning organizational values resemble personal values of the founder or founders of an organization. However, as the organization grows, its values alter in that they incorporate new experiences that bring about new values, thus making an entirely new set of organizational values that are specific to that very organization.

Organizational values are a part of organizational culture [52] and represent [51] relatively permanent, motivational, emotionally positive categories, for which people believe that they are worth aspiring to (love, peace, friendship, health, etc.). Through values we can also see (lifetime) goals, which reflect cultural or spiritual development of an individual or an organization. Boyatzis is regarded as one of the founders of modern definitions of competencies and argues that [9] values are the basis of the definition of competencies. There are many other definitions of competencies [45], [56], [13], [23], [46], [7] in which the following is emphasized: personal characteristics, knowledge, abilities, motivation, self-image and values. Above-mentioned authors agree that competencies develop through time based on experiences people get by performing various jobs.

The concept of correlation of organizational values with competencies is based upon a correlation that is already established within organizational culture, for which we know that organizational values are a part of. It attracts people with similar values, beliefs, knowledge, skills and abilities. In other words, certain competencies have an indirect influence on the development of organizational culture. The motivation for this research evolved form discussion [39] in which tried to answer the question of how to link and explore organizational values with managers' competencies. It was suggested [39] that the best way to link and explore this is at the process level where we can compare processes within an organization and involvement as well as cooperation of managers within those same processes. This kind of research has some limitations, such as a limited number of processes that can be investigated, which is why we have decided to conduct a cross-sectional research, as it enables us to investigate a much bigger sample.

1. Theoretical Background

1.1 Values

Values are beliefs upon which individuals perform their tasks [3] on the basis of their preferences. On the other hand, values are relatively permanent [21] perceptional frames that shape and influence the nature of individuals' behavior. Much work in the area of values was also done by Rokeach [50] who defined values as "types of beliefs, that are centrally located in individuals system of beliefs and they represent individual's attitudes towards how someone should or should not behave." Extensive research on values [54]

has made a definition of values from the social-psychological perspective saying that "values are:

- beliefs or conceptualizations,
- about wanted end states or behaviors,
- that exceed specific situations,
- direct the evaluation of behavior, and
- rated regarding the relative importance."

With this definition we have, to some extent, moved away from, at that point, well-established model proposed before [51].

1.2 Organizational Values

When discussing the problem of defining organizational values it was [48] concluded that organizational values evolve from organizational culture; they believe that this is generally the philosophy which an organization follows. Organizational values [55] are written within organizational culture, given that organizational culture defines expectations regarding behavior, modes of conduct, modes of decision-making and communication styles. Further it is stressed that the importance of a broader discussion regarding organizational values is important since this is the only way towards an agreement on the definition of values.

Various authors [47], [16], [14] have been discussing the correlation between organizational values and long-term performance of organizations, this correlation is proven on several practice cases. It has also been determined that organizations with clearly stated organizational values, which are internalized by employees, reach significantly higher performance results compared to values which are less clearly stated or not stated at all [16]. On the other hand there have been warnings about potential hazards young organizations are faced with, especially regarding organizational values [20], that when an organization is young and growing miss defined organizational values can hinder its growth and potentially endanger its development.

1.3 Fit of Values

When discussing how organizational values fit personal values, we can identify four prominent theories that were developed through time.

In the field of interactional theory, [40] we can see proposition of a fit between personal values and environmental values (personality-environment fit theory). For the purpose of this article we will focus on two theories: a theory that focused on fit between a person and a job (personality-job fit theory) [31], and theory [34] which focused on a fit between a person and an organization (personality-organizational fit). The remaining two theories are theory [32] of fit between a person and one's vocation (personal-vocational fit) and a theory [29], [26] which discusses the fit between a person and a group (personality-group fit). Research [49] also found out that the higher level of fit between organizational and personal values is clearly shown in individuals' positive approach to work as employees are more satisfied when they are performing their tasks.

1.4 Competencies

Boyatzis considered by many to be a pioneer in the field of competencies, has done an extensive research among managers in the USA, identifying factors that influence their success [9]. The study focused on managerial competencies. Findings [9] revealed that competencies are a mixture of individuals' motives, abilities, self-image, social role and knowledge that a person uses in social interactions. On the other hand, we can see definition of competencies [42] in a differently as knowledge, that one had gained. As such they are influenced by motives, abilities, self-image, social role and knowledge that one uses in social interactions [9]. There are other authors [4], [8] who view competencies as individuals' behaviors in a certain situation. In this respect, they understand knowledge as something that is individually learned; they propose behaviors to be the reflection of competencies. Yet another definition of competencies was proposed [37] that somewhat incorporates various other definitions of competencies, by saying that he understands individuals competencies as: "activation, implementation and cohesion of all the knowledge's, abilities, motives, self image and values that enables the individual to perform tasks and solve problems in complex, various and unexpected situations that face him".

Moreover, another interesting definition was proposed [46] that "competencies are appliance and correlation of knowledge, abilities, motives, self image and values that shape individuals competencies". Some have identified competencies as [28], [7] personal characteristics that have evolved through the educational process and were further shaped by work in organization; therefore, authors do not just take into account the

educational process but also the work experience; however, we can also see addition of the social environment [41], [10], in the so called primary socialization period.

1.5 The Influence between Organizational Values and Competencies of Managers

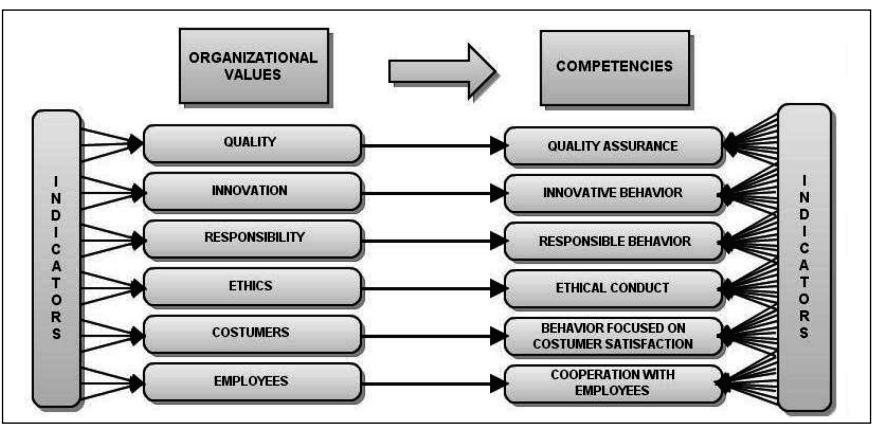
The concept of linking organizational values to competencies was linked with organizational culture, as organizational values are a part of it and as such they attract people with similar value principles and knowledge, skills and abilities. In other words, certain competencies influence how organizational culture is created. Therefore, this indicates that there is a correlation between organizational values and competencies that is worth researching. This, however, does not mean that this area has not yet been researched. For example, the process examined level where we can compare processes within an organization and involvement as well as managers' cooperation within those same processes [39]. Although this research yielded some results, we believe that the very decision to research the process level has influenced the results, showing less correlation than there actually is. We can also see investigation of the correlation between managers' values and organizational culture [5]; findings which refer to managers' values are still relevant today and have influenced the development of organizational culture. The studies discussed above are in line with our initial assumption that there is a correlation between organizational values and managers' competencies, thus making this topic particularly interesting to research.

2. Research Model

Having closely studied various scientific and professional literature (studies and theories on organizational values and competencies) we have determined that there is no model that could be applied to our data. This encouraged us to develop and propose our own model, though we knew that this also brings about some limitations:

- First, we decided to analyze organizational values of numerous organizations; we noted how many times a certain organizational value shows up and concluded that the following six organizational values most frequently occur in organizations from the travel and leisure industry: quality, innovation, responsibility, ethics, customers and employees.
- Second, each organizational value was matched up with a competency that is in line with the meaning of that value. Based on this, six organizational values and matching competencies were identified. Furthermore, indicators were identified that represent each organizational value or competence that was tested before. We adapted those indicators to our model, shown in Figure 1.

Fig. 1: Research model



Source: [24]

The left column of the model features indicators that have been previously formed [44]. **Quality** thus refers to the quality of work and life, whereas **innovation** refers to quest for quality and facilitation of quality. The value **responsibility** refers to responsible use of resources and responsible behavior. Similarly, the value **ethics** refers to ethical behavior and ethical standards. The value **customers** refer to knowledge that costumers are the focal point of every organization. Last but not least, the value **employees** refer to knowledge that employees are a powerful source of the company.

The right hand side presents competencies with indicators. They were adapted from the competency profile published by the Center of Republic of Slovenia for Vocational Training (here on CVT). For the purpose of this research a competency model developed by CVT for the profession of hotel managers was used [15]. This standard includes 114 work tasks and for each competence that we have in our model we selected 8 tasks, which reflect a certain competency.

Indicators for values have already been tested [44]. However, the indicators for competencies still needed to be tested. For this reason a pilot research was conducted that confirmed the validity of selected indicators. Nevertheless, minor changes were undertaken before the survey, presented in this study, was conducted.

3. Methodology

3.1 Research Question and Hypothesis

The aim of the research was to test the validity of the model shown in Figure 1. To this end, our research question is: **Is there a statistically significant influence of organizational values on matching competencies?**

In order to answer this research question the following research hypothesis was set up:

H: The organizational values statistically significantly influence competencies of managers.

3.2 Instrument

The correlation was tested using a questionnaire with a paper-and-pencil survey. The whole population of the sector (travel and leisure) represents 9,117 people. We have been given consent from several organizations within the sector that employs 2,762 people. 1,100 questionnaires were distributed. The sampling within organizations was random. Of 1100 questionnaires, 388 were returned, what represents 35.27% of all questionnaires sent out, i.e. 4.26% of the entire population.

The questionnaire comprised 75 questions relating to (1) organizational values, (2) competencies and (3) respondent's details (age, gender, number of working years, level of education etc.).

3.3 Sample

We evaluated the validity of the sample within the selected sector. The test chi-square test of significance was employed on the following demographic information of respondents: gender, education and age. For the variable *sex,* chi-square was 0.598 and significance level at $p = 0.434$, for the variable *education*, the chi-square test was 9.296 with significance level at $p = 0.054$, the final variable *age* provided a value of 13.971, and the level of significance was at $p = 0.052$.

The value of chi-square distribution at significance 0.05 or 5% are for variables with single degree of freedom (variable gender) 3.8415, for variables with four degrees of freedom (variable education) 9.4877 and for variables with seven degrees of freedom (variable age) 14.0671 [38].

Based on the findings we can conclude that the research sample could be generalized to the whole population.

The sample which has been used for the purpose of this paper contained 133 (38.4%) male respondents and 213 (61.6%) female respondents. The data on age groups are presented in Table 1.

The data on education are shown in Table 2.

Tab. 1: **Age groups of respondents'**

Age group	Responses	%
Up to 24 years (inclusive)	31	8.9
from 25 to 29 years	49	14.0
from 30 to 34 years	53	15.2
from 35 t0 39 years	51	14.6
from 40 to 44 years	60	17.2
from 45 to 49 years	50	14.3
from 50 to 54 years	38	10.9
55 years or more	17	4.9
Total	349	100.0

Source: [24]

Tab. 2: **Education of respondents**

Education	Responses	%
Elementary school or less	34	9.6
Vocational high school	83	23.5
High school	121	34.3
College degree	80	22.7
University degree or more	35	9.9
Total	353	100.0

Source: [24]

4. Results

First, we tested the validity of the questionnaire using the Cronbach's alpha test, calculating the coefficients for each set of variables. We have performed this test on variables that measured values first; the value was 0.859, thus indicating great reliability of measurement. For variables that measured competency quality the value was 0.833, for variables measuring innovation competence the value was 0.823, for variables measuring responsibility competence the value was 0.855. Moreover, for variables that measured the ethics competence the value was 0.841 and for customers competence the value was 0.840. Finally, the variables that measured the quality competence the value was 0.861. These values indicate great reliability of measurement [22] and with regard to the composition and characteristics of the sample, we believe that it is representative.

4.1 Formatting Merged Variables

The structure of the questionnaire used in the survey demanded some variables to be merged and not used individually. Values of some variables that were intentionally formed in negative form statements were transformed through the statements before creating composite variables and were not changed into positive form.

In the first step we have conducted a factor analysis on the set of first 20 variables that measured organizational values. Out of 20 variables 12 of them have positioned themselves in 6 different factors with suitable weights, other 8 have either not positioned in any of the factors or have had minimum weight in two or more factors that is why we have removed them. Results are shown in Table 3.

Tab. 3: Factor analysis of variables that measured organizational values

Variable	Factor					
	1	2	3	4	5	6
V3 Quality of work is important in our organization.	.942					
V4 Within our organization we are focused on successfully completing our tasks.	.754					
V20 Encouragement of positive examples is rare in our organization.		.726				
V15 Inhibition of innovative ideas is frequent in our organization.		.710				
V18 Adaptation to different business situations presents a problem for our organization.			.659			
V10 Immoral behavior at work is acceptable in our organization.			.620			
V7 In our organization we respect each other.				.902		
V12 Employees in our organization interact.				.622		
V19 In our organization we try to satisfy the needs of our costumers.					.869	
V8 Practices in our organization are focused on our costumers/guests.					-.533	
V5 At work in our organization we behave responsibly towards others around us.						.723
V2 To achieve the objectives within our organization we are working persistently.						.210

Source: [24]

We have named the factors that we have determinated in Table 3 in the following order; the first factor represents quality, so we have merged the variables in the first factor into new variable named **OVQ – Organizational value quality.** The variables in the second factor represent innovativeness, so we have merged the variables in the second factor in new variable named **OVI – Organizational value innovation.** The variables in the third factor represent ethical conduct, so we have merged the variables in the third factor in new variable named **OVE – Organizational value ethics.** The variables in the fourth factor represent employees, so we have merged the variables in the fourth factor in new variable named **OVE – Organizational value employees.** The variables in the fifth factor represent costumers, so we have merged the variables in the fifth factor in new variable named **OVC – Organizational value costumers.** The variables in the final sixth factor represent responsibility, so we have merged the variables in the sixth factor in new variable named **OVR – Organizational value responsibility**.

Some may argue that the second variable in sixth factor V2 To achieve the objectives within our organization we are working persistently is not suitable to be positioned due to the relatively low weight that it has, but due to the fact that it has positioned only in this sixth factor and it has positioned as a second not a leading variable in this factor we have decided to use it anyways. With the help of factor analysis we were able to explain 67.76% of variability of organizational values with these 12 variables in 6 factors.

In the second step we have conducted a factor analysis on the set of second 48 variables that measured competencies. Out of 48 variables 30 of them have positioned themselves in 6 different factors with suitable weights, other 18 have either not positioned in any of the factors or have had minimum weight in two or more factors that is why we have removed them. Results are shown in Table 4.

Tab. 4: Factor analysis of variables that measured competencies (part 1)

Variable	Factor					
	1	2	3	4	5	6
U1 My manager communicates with costumers respectfully.	.719					
E5 My manager supervises compliance of external and internal regulations.	.544					
O6 My manager monitors the results of the organizational unit.	.516					
E4 My manager works in accordance with the environmental protection measures.	.509					
O2 My manager distributes the work of subordinates according to workload.	.487					
U3 My manager takes care of the importance of contacts with costumers.	.481					
O7 My manager takes care to ensure the rational use of energy, materials and time.	.455					
E6 Disrespectful communication with employees is typical for my manager.		.696				
E3 Immoral conduct is typical for my manager.		.581				
Z1 My manager's conduct creates a negative atmosphere.		.580				
U8 My manager fails to ensure good relationships with customers.		.538				
E7 My manager has a discriminatory attitude towards employees.		.494				
I2 Encouraging changes to the procedures at work are typical for my manager.			.652			
K3 My manager is monitoring the implementation of tasks.			.495			
K2 My manager resolves demanding complaints professionally.			.474			
K4 My manager encourages employees to perform better at work.			.465			
I5 Timely identification of new forms of work is typical of my manager.			.443			
K1 My manager does not supervise the work process.				.771		
K5 My manager does not control the quality of performed work.				.566		
O1 My manager irresponsibly orders the work of employees.				.506		
K8 My manager is not able to deal with tasks in timely manner.				.467		
O3 My manager is unprofessional at organization of work within the unit.				.456		

Tab. 4: Factor analysis of variables that measured competencies (part 2)

Variable	Factor					
	1	2	3	4	5	6
Z7 Providing instruction to new employees at work is typical for my manager.					.802	
Z2 My manager participates as a mentor to new employees.					.702	
Z8 My manager advises employees at work.					.653	
Z4 Caring for the continuous development of employees is typical of my manager.					.539	
Z3 Resolving the concrete problems in the process is the nature of my manager.					.466	
U6 My manager prepares special market outlets (discounts, credits, ect.)						.465
U7 My manager monitors customer loyalty.						.374
U5 My manager monitors supply on the market.						.351

Source: [24]

We have named the factors that we have determinated in Table 4 in the following order; the first factor represents responsible behavior, so we have merged the variables in the first factor into new variable named **CR – Competencies responsibility.** The variables in the second factor represent ethical conduct, so we have merged the variables in the second factor in new variable named **CE – Competencies ethics.** The variables in the third factor represent innovative behavior, so we have merged the variables in the third factor in new variable named **CI – Competencies innovation.** The variables in the fourth factor represent assurance of quality, so we have merged the variables in the fourth factor in new variable named **CQ – Competencies quality.** The variables in the fifth factor represent cooperation with employees, so we have merged the variables in the fifth factor in new variable named **CEm – Competencies employees.** The variables in the final sixth factor represent costumers, so we have merged the variables in the sixth factor in new variable named **CC – Competencies costumers**.

With the help of factor analysis we were able to explain 54.96% of variability of competencies with these 30 variables in 6 factors.

After forming new merged variables we have also merged all organizational values into one new variable that we have named **OVMe – Organizational values merged.** We did the same with all merged competencies and created another new variable named **CMe – Competencies merged.** Our next step was to measure mean values and standard deviations in these newly formed variables, results are show in Table 5.

Illustrated in Table 5, neither of mean values nor standard deviations of newly formed variables are above the generally expected range. As far as mean values go there is not much of a difference between variables related to organizational values compared to the variables related to competencies, but when we look into the values of standard deviations we can see that the average standard deviation is slightly lower for variables related to competencies as opposed to variables related to organizational values.

Further interest was related to measuring the correlation between merged variables of organizational values and matching pairs of merged variables of competencies. Therefore Pearson's correlation coefficient was used; results are shown in Table 6.

Tab. 5: Mean values and standard deviations of merged variables

Merged variable	Mean value	Standard deviation
Organizational values		
OVQ – Organizational value quality	4.32	0.90
OVI – Organizational value innovation	3.40	1.06
OVR – Organizational value responsibility	4.10	0.89
OVE – Organizational value ethics	3.52	1.05
OVC – Organizational value customers	4.07	0.80
OVEm – Organizational value employees	3.64	0.93
OVMe – Organizational values merged	3.83	0.63
Competencies		
CQ – Competencies quality	3.98	0.87
CI – Competencies innovation	3.68	0.86
CR – Competencies responsibility	3.91	0.82
CE – Competencies ethics	3.94	0.92
CC – Competencies customers	3.76	0.91
CEm – Competencies employees	3.67	0.91
CMe – Competencies merged	3.84	0.69

Source: [24]

Among data shown in Table 6 we have highlighted the correlations that we are interested in. All the highlighted correlations are positive, the strength of the correlation is moderate in most cases [1], only the correlations between the organizational value *responsibility* and the competence *responsibility* and correlation between the organizational value *costumers* and the competence *costumers* are strong [1] in the matching pairs that we are interested in.

Also seen from Table 6 there are some other correlations that need to be mentioned. There is a strong correlation between organizational value costumers and competencies responsibility (.628**) what can be explained that in the sector that this research was conducted costumers are very important and therefore responsible behavior of managers towards costumers is completely expected. However, there are also some pairs that have not presented statistically significant correlation, among organizational values ethics and competencies responsibility there is no statistically significant correlation (.073) and this is somewhat alarming, since it tells us that organizational value ethics does not correlate with responsible behavior of managers.

In the following section we have conducted a linear regression analysis where the influence of between independent variables towards dependent variables was analyzed. The influence of each of the independent variables was evaluated so that it is not dependent on influences between various independent variables. Table 7 presents the values of regression among pairs of independent variables (organizational values) and matching pairs of dependent variables (competencies), as proposed in our research model.

Tab. 6: Correlation between individual merged variables

	CQ – Competencies quality	CI – Competencies innovation	CR – Competencies responsibility	CE – Competencies ethics	CC – Competencies costumers	CEm – Competencies employees
OVQ – Organizational value quality	**.277****	.572**	.621**	.242**	.504**	.533**
OVI – Organizational value innovation	.366**	**.203****	.109*	.427**	.157**	.141**
OVR – Organizational value responsibility	.281**	.503**	**.534****	.244**	.476**	.596**
OVE – Organizational value ethics	.379**	.133*	.073	**.397****	.140**	.086
OVC – Organizational value customers	.254**	.587**	.628**	.224**	**.523****	.543**
OVEm – Organizational value employees	.294**	.485**	.492**	.293**	.448**	**.497****

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

Source: [24]

Tab. 7: Regression analysis between organizational variables and competencies

Regression → Organizational values – competencies	ΔR^2	F	P
OVQ – Organizational value quality – CQ – Competencies quality	.074	30.761	.000
OVI – Organizational value innovation – CI – Competencies innovation	.038	15.784	.000
OVR – Organizational value responsibility – CR – Competencies responsibility	.283	143.634	.000
OVE – Organizational value ethics – CE – Competencies ethics	.155	67.832	.000
OVC – Organizational value customers – CC – Competencies customers	.272	115.495	.000
OVEm – Organizational value employees – CEm – Competencies employees	.245	119.724	.000
OVMe – Organizational values merged – CMe – Competencies merged	.397	179.457	.000

Source: [24]

Table 7 shows the results of linear regression. The first pair includes the independent variable *OVQ – Organizational value quality* and the dependent variable *CQ – Competencies quality*. Result ($\Delta R^2 = 0.074$; $F = 30.761$; $p = 0.000$) shows that with the influence of *OVQ – Organizational value quality* we can explain 7.4% of variability of value for *CQ – Competencies quality*. In the second pair, we put the independent variable *OVI – Organizational value innovation*, and dependent variable *CI – Competencies innovation*. Result ($\Delta R^2 = 0.038$; $F = 15.784$; $p = 0.000$) shows that with the influence of *OVI – Organizational value innovation* we can explain 3.8% of variability of value for *CQ – Competencies innovation*, in the third pair we put

the independent variable *OVR – Organizational value responsibility* and the dependent variable *CR – Competencies responsibility*. The findings show ($\Delta R^2 = 0.283$; F = 143.634; p = 0.000) that with the influence of *OVR – Organizational value responsibility* we can explain 28.3% of variability of value for *CR – Competencies responsibility,* in the fourth pair we put the independent variable *OVE – Organizational value ethics*, and dependent variable *CE – Competencies ethics*. Results ($\Delta R^2 = 0.155$; F = 67.832; p = 0.000) show that with the influence of *OVE – Organizational value ethics* we can explain 15.5% of variability of value for *CE – Competencies ethics*, in the fifth pair we put the independent variable *OVC – Organizational value costumers*, and dependent variable *CC – Competencies costumers*. Results ($\Delta R^2 = 0.272$; F = 115.495; p = 0.000) show that with the influence of *OVC – Organizational value costumers* we can explain 27.2% of variability of value for *CC – Competencies costumers*, in the final sixth pair we put the independent variable *OVEm – Organizational value employees*, and the dependent variable *CEm – Competencies employees*. Results ($\Delta R^2 = 0.245$; F = 119.724; p = 0.000) show that with the influence of *OVEm – Organizational value employees* we can explain 24.5% of variability of value for *CEm – Competencies employees*.

We also performed this same linear regression analysis on the independent variable *OVMe – Organizational value merged*, and dependent variable *CMe – Competencies merged*. Results ($\Delta R^2 = 0.397$; F = 179.457; p = 0.000) show that with the influence of *OVMe – Organizational value merged*, we can explain 39.7% of variability of value for *CMe – Competencies merged*.

Based on the results we can **confirm** the hypothesis H: The organizational values influence competencies of managers.

5. Practical Implications of Findings

Our results can be backed up by several other findings. As presented, respondents who more often said that organizational value *quality* is important for an organization in which they work also more often said that quality competencies more often show the way their managers work (r = 0.277 *Correlation is significant at the 0.01 level (2-tailed)*), adding to that the results of linear regression, in the this first pair we see that the independent variable *OVQ – Organizational value quality* explains 7,4% of variability of the dependent variable *CQ – Competencies quality*. This backs up the findings [11] that managers support organizational values related to quality, that are supported in ongoing behavior of managers and will have impact on quality of performance.

We have also showed that respondents who more often said that organizational value innovation is important for organization in which they work also more often say that innovative competencies also more often show the way their managers work (r = 0.203 *Correlation is significant at the 0.01 level (2-tailed)*, adding to that the results of linear regression, in the this second pair we see that the independent variable *OVI – Organizational value innovation*, explains 3.8% of variability of the dependent variable *CI – Competencies innovation*. Since the result is the lowest among all six pairs this corresponds with findings that found out that [12] innovation among service and tourism enterprises is characterized by relatively low propensity for the development of new products and processes.

For those respondents who more often said that the organizational value *responsibility* is important for the organization in which they work also more often said that responsibility competencies also more often show the way their managers work (r = 0.534 *Correlation is significant at the 0.01 level (2-tailed)*. Adding the results of linear regression for the third pair we see that the independent variable *OVR – Organizational value responsibility*, explains 28.3% of variability of the dependent variable *CR – Competencies responsibility*. This also backs up research [36] which showed that in organizations where responsibility is shown as organizational value, managers take it as their own and make it one of their focal values.

Among those respondents that more often said that organizational value *ethics* is important for the organization in which they work also more often said that ethical competencies show the way their managers work (r = 0.397 *Correlation is significant at the 0.01 level (2-tailed)*, adding to that the results of linear regression, in the fourth pair we see that the independent variable *OVE – Organizational value ethics*, explains 15.5% of variability of the dependent variable *CE – Competencies ethics*. This finding corresponds with findings [33] that have proven that positive attitude of managers towards ethical organizational values is shown in individuals' performance and effects of

organizational performance as well. However, this does not support the claim [2] that ethical values are amongst least important ones, since our values put it somewhere in the middle.

We have also given evidence that those respondents that more often said that organizational value costumers is important for organization in which they work also more often say that costumer oriented competencies also more often show the way their managers work (r = 0.523 *Correlation is significant at the 0.01 level (2-tailed*), adding to that the results of linear regression, in the this fifth pair we see that the independent variable *OVC – Organizational value costumers*, explains 27.2% of variability of the dependent variable *CC – Competencies costumers*. This combined, backs up findings that [43] have concluded that if management supports the costumer-driven focus higher hotel performance levels are more likely to be the outcome.

In our research, those respondents, who more often expressed that organizational value employees is important for an organization in which they work, are also more often convinced that employee oriented competencies also more often show the way their managers work (r = 0.497 *Correlation is significant at the 0.01 level (2-tailed*), adding to that the results of linear regression, in the this sixth pair we see that the independent variable *OVEm – Organizational value employees,* explains 24.5% of variability of the dependent variable *CEm – Competencies employees*. This backs up research [25] that determined that leaders (managers) who adopt organizational values are more likely to be followed by their employees.

The findings are relevant for everyday management within organization and this research directly supports the idea [17] of transforming management style from previously known Management by objectives (MBO) [19] to Management by Values (MBV). Although Management by values was previously discussed by others [6] it was the contribution made by Dolan and Garcia [17] and their further work Dolan et. al. [18], which evolved the theory to the extent that we know it today. The theory suggests that in the modern world managing by objectives is not good enough. It is no doubt that modern day employees want to be empowered, they want to have more responsibilities, more freedom with creativity, more flexibility and above all more autonomy in their decision. This presents a problem for the management, especially in the part where management is responsible for overseeing employees' work, since it is hard to control employees and at the same time give them autonomy in their work.

Conclusion

Many authors have discussed the different meanings and influences individuals as well as organizational values may have on other phenomena, the same goes for competencies. Based on theoretical knowledge and the findings of previous research, a conceptual model of organizational values influence on competencies of managers was developed and tested. In principle we can assert that findings of other studies regarding the researched topics support the objectives, set in this paper. Hence, we may conclude that there is an undeniable influence of organizational values on managers' competencies. Taking this into account we can say that we have proven that theory of management by values [17] is valid.

For each of the six selected organizational values (quality, innovation, responsibility, ethics, customers and employees) we have shown that there is a direct correlation to the corresponding behavioral patterns that are represented in managers' competencies (quality assurance, innovative behavior, responsible behavior, ethical conduct, behavior focused on customer satisfaction and cooperation with employees). Using linear regression analysis we may confirm that each organizational value explains a certain percentage of corresponding competence of managers.

The statistically significant correlation (r = 0.277) as well as a relatively high level of variability (7.4%) explained between independent variable *OVQ – Organizational value quality* and variable *CQ – Competencies quality*, clearly shows that quality is very important for any organization, since nowadays more or less everything is about quality, and customers want better quality in every aspect. On the other hand, the statistically significant correlation (r = 0.203) as well as a relatively low level of variability (3.8%) explained between the independent variable *OVI – Organizational value innovation* and the dependent variable *CI – Competencies innovation*, is somewhat alarming, since it shows that even if organizational value innovation is perceived to be important within the organization, managers do not seem to show it through

their work so directly. Nevertheless, innovation is important for every organization since it is the source of prosperity. There was also statistically significant correlation (r = 0.534) as well as moderate level of variability (28.3%) explained between the independent variable *OVR – Organizational value responsibility* and dependent variable *CR – Competencies responsibility*. This was somewhat expected, since responsible behavior is promoted by all societies. Results also show that responsibility as a value positively influences responsible behavior of managers. The statistically significant correlation (r = 0.397) as well as the moderate level of variability (15.5%) explained between independent variable *OVE – Organizational value ethics* and dependent variable *CE – Competencies ethics*, was also somewhat expected, since ethical behavior has been promoted by all the levels in society for decades. Results also show that ethics as a value influences managers' ethical behavior and is reflected in their work practice. The statistically significant correlation (r = 0.523) as well as the level of variability (27.2%) explained between independent variable *OVC – Organizational value costumers* and dependent variable *CC – Competencies costumers*, indicates the importance of customers. This result, as may be argued by some, might be viewed as overstated, given that research was done in a sector that is focused on direct customers (travel and leisure). However, research questions did not distinguish between different types of customers. Nevertheless, results support the initial claim that customers as an organizational value influence the behavior focused on customer satisfaction by managers. Finally, there is statistically significant correlation (r = 0.497) as well as a relatively high level of variability (24.5%) explained between the independent variable *OVEm – Organizational value employees* and the dependent variable *CEm – Competencies employees,* what was also somewhat expected, given that cooperation with employees promotes the idea discussed in Management by values theory (MBV) that employees must be valued. The results clearly show that employees as a value influence managers' behavior, which is focused on cooperation with employees.

Our research had certain limitations. First, there was the research instrument, i.e. the questionnaire. On the one hand, it is the most appropriate tool for research, but on the other hand, structured questionnaires give little room for in-depth knowledge on certain subjects. Second, there is the limitation of the sample. We decided to conduct a research in a single sector. Ideally the research would be undertaken on a larger scale, including several sectors. However, the validity of the research [27] made in a single sector and concluded that results can indeed be generalized if the selected sector is not specifically denoted by population assumptions. Another limitation to this research also lies in the fact that it was conducted in a single country, hence, results may vary by country. Overall, we believe that results are still representative and the limitations are withheld to the minimum, thus results are generally applicable and can also be used for further research.

From the viewpoint of practice the results clearly support the theoretical conceptualizations [17] that in the 21st century is most likely to bring about changes in everyday work life that will impact the ways, in which organizations are managed. We believe that organizational values are very important for organizational performance. Hence, they are not just a marketing tool for customer aquisition. Organizational values are becoming increasingly important, and are having an influence on managers' behavior and their work practice. However these results should not give the reader the assumption that only those organizations with healthy organizational values, which are incorporated into managers' competencies, will be able to prosper in the future, there is no doubt that these organizations will be more successful but setting goals is still very much important, and values as well as competencies will just be a tool that will help set proper goals and show proper paths to reach them.

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Abstract

THE INFLUENCE OF ORGANIZATIONAL VALUES ON COMPETENCIES OF MANAGERS

Mitja Gorenak, Marko Ferjan

This paper discusses the influence of organizational values on managers' competencies. Organizational values are a reflection of individual values of founder or founding members of the organization. Through time organizational values are shaped by every member of the organization and by events that shape the organization. On the other hand competencies of managers are not shared by the whole organization though they do influence the way managers run their organizations and through this also how organizations work. Based on the findings of previous studies a model for measuring the influence of organizational values on managers' competencies was proposed. More specifically, by conducting a preliminary study a model was created that discusses the influence of six most commonly stated organizational values on the matching competencies. To this end research question has been proposed: What is the level of correlation between organizational values and matching competencies of managers? The paper-and-pencil survey was carried out in the travel and leisure industry, where 1,100 employees were surveyed. The 388 participants who filled out the questionnaire represent a 35.27% yield of surveys sent out and 4.26% of the population of this industry in Slovenia. We have determined that there is a statistically significant influence of organizational values on matching competencies. This finding clearly indicates that organizational values have a strong influence on managers' competencies. This also to some extent supports the idea of managing by values where managing of organizations is focused on organizational values and every decision is done through the scope of these values.

Key Words: *Values, organizational values, competencies, model, travel and leisure industry.*

JEL Classification: *M12.*

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MULTICRITERIA DECISION-MAKING WEIGHTS AND A COMPETITIVE PRODUCT DESIGN

Filip Tošenovský

Introduction

Competitive environments exist or can be created for a majority of human activities. This is true because human activity can usually be performed by more than one subject, and to incite subjects to being competitive, it suffices to compare results of their activity on the basis of selected criteria or features which characterize these results. When competition occurs, one may react to it in different ways. Trying to distinguish oneself from others is one reaction, striving to catch up with the competition or overtake it might be another reaction. In economy, where economic survival and prosperity is often the ultimate objective, it might be necessary to overtake, or at least catch up with, the competition, as being only different may not be perceived as a sufficient guarantee of future financial stability. Staying in economy, where human activity results in a product, and holding to the idea that it is advisable *to have at least as good a product as the competition*, two questions arise:

1. How to compare two typologically identical products in a competitive environment?
2. If a product is worse than another, how to change its features to make it competitive?

Regarding the first question, it is not a problem to compare two products of the same type, as long as they are compared by a single criterion. The product which is better by that criterion is simply better overall. More often, however, products are compared by more criteria, which makes it more complicated to make a judgement which product is better, especially when one product is better than another by some criteria and worse at the same time by other criteria. In the less favourable case, it is possible to assign an aggregate value to each product so that the products are eventually comparable. There are various approaches how to determine such an aggregate value. One of the approaches assigns nonnegative weights $w_i, i = 1, 2, \ldots, n$, the sum of which equals one, to n criteria we work with when evaluating products, and the product aggregate value is then given by the weighted average $h_1 w_1 + h_2 w_2 + \ldots + h_n w_n$, where h_i is an evaluation of the i-th feature of the product, the feature being defined by one of the criteria [5]. The features are actually criteria defined by the customer. The evaluations h_i's are given or designed by the product maker. The features discussed may include such characteristics as product price, product power efficiency, product battery life, and so on. If a feature can be looked at in more than one way (product colour, for instance, can be discussed in terms of its aesthetic value or its potentially adverse effect on human health), then each of these interpretations may represent a separate feature (in the case of colour, both its aesthetic value and its safety would represent two separate product characteristics). The strength of the weighted-average approach is clear: in a group of typologically identical products, each product is evaluated with a single number representing an aggregation of the product information. Since there is only one number that is assigned to each product, the products can be arranged from best to worst. Although not the only one, this approach is natural and reflects importance of all the criteria considered. This type of aggregate product evaluation will be utilized in this paper, and will be considered a *model* that describes, at least approximately, the decision-making process customers go through when buying a product.

As for the second question, assuming that a lower aggregate product value, as described above, means a worse product, the second question asks us how to adjust the feature levels h_i's of a product so that its new

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aggregate value, implied by the adjusted h_i's, is higher than its existing aggregate value. To answer this question, the weights w_i's must be known because otherwise it is impossible to calculate either the original or the adjusted aggregate value of the product. But how to set the weights if they are defined by the customer? It is the customer who knows which of the criteria is important and which isn't. Product manufacturers, who would like to adjust the evaluations h_i's to become more competitive, do not know the weights, and thus cannot know how to change their product characteristics accordingly.

This paper focuses on answering the second question, utilizing the model of the product evaluation described above. The paper proposes an approach which results in finding a specific set of weights without knowing much about the customer. The approach benefits from the general theory of optimization. After analysing the problem of weights, the paper completes the description of the procedure for finding the weights with a cost-effective way of improving the evaluations h_i's so that the aggregate value of the upgraded product was on par with the competition as cheaply as possible. Further, regarding the weights, the procedure presented in the paper is compared with another approach that finds alternative weights. This alternative approach offers itself as an answer to the second question more naturally than the approach proposed in the paper, but, in fact, it will turn out to be a less favourable approach, since it may often not have a realistic interpretation. Also, the proposed procedure always leads to a unique result, as will be shown, and this cannot be said about the alternative procedure. The paper contains examples of the theoretical results, as well. The examples support the validity of the theory proved in the paper.

Generally speaking, the procedure we are about to deal with technically lies in optimizing a mathematical expression – in minimizing the expression. The minimization will seek weights which will bring an assessment of one product (a worse one) to an assessment of another product (a better one) as close as possible. The decision to minimize the difference in assesments of two products is based on the effort to utilize the minimization in capturing market dynamics, or its change, in the following sense of the word: let us imagine that we are a producer who prospers more than our competitor in terms of product sales, the competitor serving for our business purposes as a certain standard. Let us assume that the competitor starts to overtake us in the product sales. Such a move necessarily suggests the market has changed – our product starts to be percieved differently by customers. We are interested in how such a change might look like, according to a model, so that we could respond to the change accordingly. In trying to find out the new form of the customer perception of our product, we could base our inference about the customer on the fact that the customer evaluates the product somehow, and we can try to model this assessment in a „natural" way, and on the fact that, at the moment, we do not fall behind the competitor too much with our product. We will never find out how much we fall behind the competitor with our product, described by its features and their importance, nor the customer is likely to describe it exactly due to the amount of vagueness related to weights. However, we may approximate the currently small difference in the perception of our and the competitive product with the minimal difference in this perception. None the less, more mathematical expressions offer themselves as a description of the difference in the product perception which could be minimized. We will show, as we already outlined in the previous paragraph, that some of these expressions or approaches serve our purposes better than others. The minimization can be used as a model that helps us discover a potential distortion in our expectation of what the customer wants from our product. Maybe, the customer began to want something else than what we had expected. Of course, this change will also be reflected, among other things, in our product sales. If the model is to function reasonably, it should not be used with too much of a delay after it begins to be obvious that our market position stopped being superior to that of our competitor.

Before presenting the approach or the model, let us note that different procedures to set weights were proposed in the past by many authors, using various mathematical tools. As early as the 1970s, Pekelman and Sen [11] exploited the possibility of modelling customers' behaviour with the mathematical programming optimization, although their procedures were rather limited to specific market segments, particularly to cereal products. Most scientific

papers devoted to this subject dealt with weights which are defined by decision makers themselves who know best their subjective approaches to decision problems. This is not our situation, however. Our situation is such that the mind of decision makers/customers remains unknown to those who want to sell their products. To give some typical examples of the papers devoted to weights defined by decision makers themselves, Nutt [8], for instance, compared several ways of determining the weights by decision makers. Choo and Wedley [2] used the linear programming methodology and decision makers' past rulings to find weights which would lead to multicriteria problem solutions complying with the decision makers' notion of how the solution should look like. Solymosi and Dombi [12] worked out a way of setting weights, which required information from decision makers in the form of inequalities. From more recent papers, Choo, Schoner and Wedley [3] were preoccupied with pitfalls of decision-making weights interpretation, giving recommendations to decision makers how to proceed when defining weights. A step towards working with weights without prior information appeared in a hybrid approach introduced by Ma, Fan and Huang [7]. The approach combines objective information and subjective knowledge to determine weights; the procedure still requires some specific knowledge of the decision maker's behaviour. Most recently, the scientific progress in the field of multicriteria decision-making has focused on modelling the uncertainty embedded in the lack of information with fuzzy sets and numbers. These approaches either require all or some information on the weights. Wang, Li and Wang [15] presented such approach, their procedures requiring some information from decision makers in the form of inequalities. Luo et al. [6] presented an approach with known weight information, the approach being based on weighted correlation coefficients in an interval-valued intuitionistic fuzzy environment. A similar, but improved approach applied to group decision-making was proposed by Park et al. [10]. The approach requires some information on attribute weights to be known. Finally, a fuzzy approach based on an interval-valued intuitionistic fuzzy decision matrix, was introduced by Ye [16].

As can be seen, the research has been centred largely on methods which require at least some information on criteria weights. Some methods have been presented, which are very general and do not require much information on weights, as is the case of Ye [16]. However, this method, for instance, suggests that a special fuzzy decision matrix is available from the decision maker who solves the problem. In our case, it is hard to imagine that a customer will have a good enough command of the fuzzy set theory to be able to provide the product maker with such an input matrix. In light of that, our approach, as will be seen, is simpler, and doesn't require any *specific* prior information on the weights from the customer; it rather draws on *general* information about his behaviour which is reflected in the product sales.

1. Weights

In this section, we derive a set of weights which the customer might potentially use to assess the importance of individual product features, or decision criteria, and judge on the aggregate value of the entire product, using the weighted average technique. We derive the set of weights *generally* and *explicitly*, drawing on matrix properties and optimization techniques. Technical details concerning the matrix properties are contained in the appendix to this paper. Throughout the text, the following is assumed to hold true for the subsequent procedures to be correct:

1. We improve a product with an aggregate value $b_1w_1 + b_2w_2 + \ldots + b_nw_n$, where b_i is a *positive* evaluation of the *i*-th quantitative product feature. This prerequisite automatically assumes that it is possible to calculate the aggregate value in the first place, i.e. no different physical units are considered here. Each evaluation, which may result from a test performed for customers by a scholarly journal using an evaluation scale without physical units, is in fact determined by product makers in their production process. The symbol w_i represents the *i*-th weight defined for the *i*-th criterion or feature by the customer. We shall often refer to this product as *our product* in the paper. Our product is compared to a *competitive product* valued at $c_1w_1 + c_2w_2 + \ldots + c_nw_n$, where c_i is a *positive* evaluation of the *i*-th quantitative feature of the competitive product. The same set of features or criteria and weights is used for both products.

2. A higher value of the *i*-th product feature means a better product feature.

3. $b_i < c_i, i = 1, 2, \ldots, n$, that is $\sum_k b_k w_k < \sum_k c_k w_k$. It must be stressed that this condition may not be as strict as it seems at a glance. If a product feature violates the condition, which actually means that our product is better by that feature than the competitor's product, it probably won't be something that matters much to the customer given the fact that we still experience lower product sales. It may then make sense to leave out this characteristic from further analysis since it is not relevant, and the condition 3) will be met without much harm done to the entire modelling. We can even get an idea whether such a feature, say the *i*-th feature, is important or not by solving the following simple linear problem: maximize w_i subject to $\sum_k w_k = 1$ and $\sum_k b_k w_k \leq \sum_k c_k w_k$. If the maximized value of w_i is smaller than a predetermined number, say 0.1, we may abolish this feature.

4. We work with a real Euclidean metric space, whenever metric properties occur in the text [9].

5. We assume that we are in a market where customers percieve the product consistently, i.e. the weights assigned to the product features are similar across the customers. If a product feature is important to a selected customer, the importance being expressed by the corresponding weight, that feature is also important to a similar extent to most other customers. An analogy holds true for less important product features. If this prerequisite was too far removed from reality, there would not be much sense in dealing with the techniques we are about to describe, as each customer would take a severely different approach to the product characteristics. In this case, it would not make sense to model the weights assigned to the product by the whole market because such a model would probably be too rough. The prerequisite will definitely be more easily met in an electronics market, where certain trends are fairly obvious, regarding what customers like and dislike about a product, rather than in a highly subjective market, such as the one with paintings and other works of art, for instance. No real trends in product perception exist in the latter market.

Given the assumptions, let us now return to the problem of weights. Finding weights, as proposed in this paper, benefits from the following property: if $a_i, i = 1, 2, \ldots, k$, $k > 1$, are positive numbers, the symmetric $(k-1) \times (k-1)$ matrix

$$\begin{pmatrix} a_1 + a_k & a_k & \cdots & a_k \\ a_k & a_2 + a_k & \cdots & a_k \\ \cdots & \cdots & \cdots & \cdots \\ a_k & a_k & \cdots & a_{k-1} + a_k \end{pmatrix} \quad (1)$$

is positive definite, and thus has an inverse, as well. A proof of this statement is in the appendix.

We shall use the matrix property just described to find the weights. First, let us look back at the aggregate value of our product, given by the expression $b_1 w_1 + b_2 w_2 + \ldots + b_n w_n$. We could find weights $w_i, i = 1, 2, \ldots, n$, which solve the optimization problem

$$\min_{\mathbf{w}=[w_1, w_2, \ldots, w_n] \in S} \left(\sum_i b_i w_i - \sum_i c_i w_i \right)^2, \quad (2)$$

where

$$S = \left\{ \mathbf{w} \in R^n : \sum_{i=1}^{n} w_i = 1, w_i \geq 0, i = 1, 2, \ldots, n \right\}. \quad (3)$$

This approach is very tolerant of the extent to which our product falls behind the competitive product. This approach implicitly assumes that our product falls behind the competitive product as little as possible in the sense given by (2). It is an optimistic outlook on how the customer assesses the inferior product. The customer prefers a different product, the competitive one, to our product that we want to improve, but only a little. The difference in the product evaluation is modelled as minimal. This procedure seems very natural, if one is an optimist, but the opposite will later turn out to be true – this procedure is not very natural. We are going to propose another *optimistic concept*: defining

$$a_i = \left(c_i - b_i \right)^2, i = 1, 2, \ldots, n \quad (4)$$

and using for convenience the notation

$$\mathbf{w} = (w_1, w_2, \ldots, w_n), \quad (5)$$

we are looking for weights which instead solve the following problem

$$\text{minimize } f(\mathbf{w}) = \sum_{i=1}^{n} a_i w_i^2 \text{ on } S. \qquad (6)$$

The concept given by (6) is different. Looking at the overall value of our product given by $b_1 w_1 + b_2 w_2 + \ldots + b_n w_n$, we see that each term in this summation can be viewed as a *contribution* to the overall value of the product. Let us define a vector of contributions $\tilde{\mathbf{b}} = (b_1 w_1, b_2 w_2, \ldots, b_n w_n)$ for our product and a vector of contributions $\tilde{\mathbf{c}} = (c_1 w_1, c_2 w_2, \ldots, c_n w_n)$ for the competitive product. Doing so, we optimize the function on the same set as before, but this time the optimization or minimization concerns the expression $\left\|\tilde{\mathbf{c}} - \tilde{\mathbf{b}}\right\|^2$, where the norm is Euclidean, as assumed. Therefore, we actually minimize an Euclidean distance between two vectors of contributions to the overall product value.

Let us solve the optimization problem given by (6). The coefficients a_i's are positive by assumption 3. The set S is clearly bounded, since each weight is smaller or equal to 1 and nonnegative. The set S is also closed. To prove this, one needs to show that any point $\mathbf{w} \in R^n$ whose distance from S is zero belongs to S [9]. Given a point $\mathbf{w} \in R^n$ at a zero distance from S, a sequence $\{\mathbf{w}_k\}_{k=1}^{\infty}$ of points $\mathbf{w}_k$ from S exists such that $\lim_{k \to \infty} \mathbf{w}_k = \mathbf{w}$ [9]. Thus, for the function $h(\mathbf{w}) = \sum_{i=1}^{n} w_i - 1$, $h(\mathbf{w}) = \lim_{k \to \infty} h(\mathbf{w}_k) = 0$, since the function is continuous. Also, $\mathbf{w}_k \geq \mathbf{0}$ implies $\mathbf{w} \geq \mathbf{0}$. Therefore, $\mathbf{w} \in S$.

Since the function to be minimized is continuous everywhere and S is closed and bounded, the optimization problem (6) has a solution. We will show that this solution is unique: It is obvious that (6) is a convex problem, and so, to find its global solution, it suffices to find its local solution. We will find a local solution, and since the function in (6) is strictly convex everywhere, the local solution will define the unique global solution. To solve

$$\min_{\mathbf{w} \in S} f(\mathbf{w}), \qquad (7)$$

we shall, however, solve a simpler problem

$$\min_{\mathbf{w} \in S^*} f(\mathbf{w}), \qquad (8)$$

where

$$S^* = \left\{ \mathbf{w} \in R^n : \sum_{i=1}^{n} w_i = 1 \right\}. \qquad (9)$$

As we shall see, the solution $\mathbf{w}^* = \arg\min_{\mathbf{w} \in S^*} f(\mathbf{w})$ satisfies $\mathbf{w}^* \in S \subseteq S^*$. Since $\mathbf{w}^*$ will solve the problem on a "larger" set, and belongs to S, it will also solve the original problem. Let us solve the alternative problem given by (8) and (9) by finding its unique local minimum. To do so, we use the substitution $1 - \sum_{i=1}^{n-1} w_i = w_n$. As is known, the substitution converts the constrained problem to an unconstrained one. Inserting the substitution in $f(\mathbf{w})$, this function is transformed into

$$g(w_1, w_2, \ldots, w_{n-1}) = \sum_{i=1}^{n-1} a_i w_i^2 + a_n (1 - \sum_{i=1}^{n-1} w_i)^2. \qquad (10)$$

If a local minimum of *g* is achieved at a point $\mathbf{w}^* = (w_1^*, w_2^*, \ldots, w_{n-1}^*)$, the set of equations

$$\partial g(\mathbf{w}^*) / \partial w_i = 0, \; i = 1, 2, \ldots, n-1 \qquad (11)$$

must hold, or

$$(a_j + a_n) w_j^* + a_n \cdot \sum_{k=1, k \neq j}^{n-1} w_k^* = a_n, \; j = 1, 2, \ldots, n-1. \qquad (12)$$

In matrix notation, we work with equations

$$A \cdot \begin{pmatrix} w_1^* \\ w_2^* \\ \vdots \\ w_{n-1}^* \end{pmatrix} = \begin{pmatrix} a_n \\ a_n \\ \vdots \\ a_n \end{pmatrix}, \qquad (13)$$

where A is the matrix (1). Since the matrix has its inverse (see the appendix),

$$\begin{pmatrix} w_1^* \\ w_2^* \\ \vdots \\ w_{n-1}^* \end{pmatrix} = A^{-1} \cdot \begin{pmatrix} a_n \\ a_n \\ \vdots \\ a_n \end{pmatrix} \qquad (14)$$

is the only solution to equations (13). Further, since the Hessian matrix

$$H = (h_{ij} = \partial^2 g(\mathbf{w}^*) / \partial w_i \partial w_j) = 2A \qquad (15)$$

is positive definite, $(w_1^*, w_2^*, ..., w_{n-1}^*)$ is the point where *g* attains its strict local minimum, and thus

$$\mathbf{w}^* = \arg\min_{\mathbf{w}\in S^*} f(\mathbf{w}) = (w_1^*, w_2^*, ..., w_{n-1}^*, w_n^*), \tag{16}$$

where

$$w_n^* = 1 - \sum_{k=1}^{n-1} w_k^*. \tag{17}$$

Selecting any one j-th equation in (12), we see that there exists an index $l \in \{1, 2, ..., n-1\}$ such that $w_l^* > 0$. In the opposite case, if each w_j^*, $j = 1, 2, ..., n-1$, was nonpositive, the *j*-th equation (18) could not hold, since its right-hand side is positive. The *l*-th equation, $1 \le l \le n-1$,

$$a_l w_l^* = a_n w_n^* \tag{18}$$

then implies that w_n^* is positive, and thus also each $w_j^* = (a_n / a_j) w_n^*$, $j = 1, 2, ..., n-1$, is positive. In other words, $\mathbf{w}^* \in S$, and $\mathbf{w}^*$ therefore solves the original problem $\min_{\mathbf{w}\in S} f(\mathbf{w})$. It is also the only solution to the original problem because $f(\mathbf{w})$ is *strictly* convex everywhere.

Returning to our product, the customer evaluates the product, according to our concept, by the number $\mathbf{w}^*\mathbf{b}'$, where $\mathbf{w}^*$ satisfies (14) and (17) and $\mathbf{b} = (b_1, b_2, ..., b_n)$ is the vector of individual evaluations of the product features. The competitive product is valued at $\mathbf{w}^*\mathbf{c}'$ by the customer, where $\mathbf{c} = (c_1, c_2, ..., c_n)$ is the vector of individual evaluations of the competitive product features. We have $\mathbf{w}^*\mathbf{b}' < \mathbf{w}^*\mathbf{c}'$ by assumption 3. Our next objective is to catch up with the competition in a cost-effective way, as was outlined at the beginning of the paper. To be more precise, we are looking for a new vector of evaluations $\mathbf{c}_{\text{new}} = (c_{new,1}, c_{new,2}, ..., c_{new,n})$ of our product features, for which $\mathbf{w}^*\mathbf{c}' \le \mathbf{w}^*\mathbf{c}'_{new}$. Assuming that we want to achieve this objective without degrading the current parameters of our product, i.e. $\mathbf{c}_{\text{new}} \ge \mathbf{b}$ is required, the change of our product features will cost $\mathbf{P}(\mathbf{c}_{\text{new}} - \mathbf{b})'$, where $\mathbf{P} = (P_1, P_2, ..., P_n)$ is the vector of prices. Each price contained in $\mathbf{P}$ represents expenses on the unit improvement of the corresponding product feature. If we want to minimize these costs, which is what would mean *cost-effective* in our concept, we additionally need to solve the linear program

$$\min_{\mathbf{c}_{\text{new}}} \mathbf{P}(\mathbf{c}_{\text{new}} - \mathbf{b})' \tag{19}$$

subject to

$$\mathbf{w}^*\mathbf{c}'_{new} \ge \mathbf{w}^*\mathbf{c}', \mathbf{c}_{\text{new}} \ge \mathbf{b} \tag{20}$$

2. Alternative Approach

As mentioned earlier, weights that minimize the expression $\|\mathbf{c} - \mathbf{b}\|^2$, where $\mathbf{b} = (b_1 w_1, b_2 w_2, ..., b_n w_n)$ and $\mathbf{c} = (c_1 w_1, c_2 w_2, ..., c_n w_n)$, are found. From the mathematical point of view, however, it might seem more natural to seek the weights that solve the problem

$$\min_{\mathbf{w}\in S} h(\mathbf{w}), \tag{21}$$

where

$$h(\mathbf{w}) = h(w_1, w_2, ..., w_n) = \left(\sum_{i=1}^{n} c_i w_i - \sum_{i=1}^{n} b_i w_i \right)^2. \tag{22}$$

It is another optimistic approach to finding the weights, since this approach assumes that the aggregate value of our product falls behind that of the competitor, but not much, and the amount "not much" is modelled by (21). This procedure, however, presents complications if it is compared to the earlier procedure. When finding the weights, we preferred a solution which would be *unique.* Although not explicitly said, we also preferred a solution in which all product features were considered, if possible, i.e. their weights were positive. Otherwise, it doesn't make much sense to work with all the criteria. The solution to the optimization problem (21), however, does not often meet these requirements, and thus renders itself a less favourable procedure. To see these drawbacks, let us first consider a case when $c_i - b_i = k$ for $i = 1, 2, ..., n$, where k is a constant. Then

$$\left(\sum_{i=1}^{n} c_i w_i - \sum_{i=1}^{n} b_i w_i \right)^2 = k^2 \sum_{i=1}^{n} \sum_{j=1}^{n} w_i w_j =$$

$$= k^2 \sum_{i=1}^{n} \left(\sum_{j=1}^{n-1} w_i w_j + w_i (1 - \sum_{j=1}^{n-1} w_j) \right) = k^2 \sum_{i=1}^{n} w_i = k^2$$

on S^*. (23)

Thus, $h(w_1, w_2, ..., w_n)$ being constant on $S \subset S^*$, the problem (21) has no unique solution. Further, setting first $n = 2$ for simplicity, and having by assumption $k_1 = c_1 - b_1 > 0$, $k_2 = c_2 - b_2 > 0$, $k_1 \neq k_2$, the function $g(w_1) = h(w_1, 1 - w_1)$ satisfies

$$g'(w_1) = 2w_1(k_1 - k_2)^2 + 2k_2(k_1 - k_2), \quad (24)$$

which is certainly positive for $k_1 > k_2$ and $w_1 \geq 0$, or negative for $k_1 < k_2$ and $w_1 \in [0,1]$. Therefore, there cannot be a minimum of $h(w_1, w_2)$ on S such that $0 < w_1 < 1, 0 < w_2 < 1$, because if there was, it would be a local minimum of $g(w_1) = h(w_1, 1 - w_1)$, and the derivative $g'(w_1)$ would be zero. The only point from S in which $h(w_1, w_2)$ can attain its minimum is therefore at a vertex of S, or at an *extreme* point of S. In the more general case, let us write

$$h(w_1, w_2, ..., w_n) = \left(\sum_{i=1}^{n} c_i w_i - \sum_{i=1}^{n} b_i w_i \right)^2 = \left(\sum_{i=1}^{n} k_i w_i \right)^2 =$$

$$= \left(\sum_{i=1}^{n-1} k_i w_i + k_n (1 - \sum_{i=1}^{n-1} w_i) \right)^2 = g(w_1, w_2, ..., w_{n-1}). \quad (25)$$

We have

$$\frac{\partial g(w_1, w_2, ..., w_{n-1})}{\partial w_l} = 2\left((k_1 - k_n) w_1 + (k_2 - k_n) w_2 + ... + \right.$$

$$\left. + (k_{n-1} - k_n) w_{n-1} + k_n \right) (k_l - k_n), \ 1 \leq l \leq n-1. \quad (26)$$

If we assume $k_n < k_l, 1 \leq l \leq n-1$, the set of equations $\partial g(w_1, w_2, ..., w_{n-1}) / \partial w_l = 0, 1 \leq l \leq n-1,$ does not have a solution satisfying $w_i \geq 0, 1 \leq i \leq n-1,$ since the coefficients k_i's are assumed to be positive. We could have also used a different substitution than $w_n = 1 - \sum_{i=1}^{n-1} w_i$, however; $w_1 = 1 - \sum_{i=2}^{n} w_i$, for instance, which would give us a function $g(w_2, w_3, ..., w_n)$ having derivatives

$$\frac{\partial g(w_2, w_3, ..., w_n)}{\partial w_l} = 2\left((k_2 - k_1) w_2 + (k_3 - k_1) w_3 + ... + \right.$$

$$\left. + (k_n - k_1) w_n + k_1 \right) (k_l - k_1), \ 2 \leq l \leq n. \quad (27)$$

Again, assuming $k_1 < k_l, 2 \leq l \leq n$, the set of equations $\partial g(w_2, w_3, ..., w_n) / \partial w_l = 0, 2 \leq l \leq n,$ does not have a solution satisfying $w_i \geq 0, 2 \leq i \leq n.$ It follows from here that whenever there is a unique minimum among the numbers $k_i = c_i - b_i, i = 1, 2, ..., n$, the problem $\min h(\mathbf{w})$ on S does not have a solution in the interior of S. If it had, the point would be a local minimum of $h(\mathbf{w})$ not only on S, but also on $S^* \supset S$. This would mean, however, that the "projection" g, constructed from $h(\mathbf{w})$ through a *suitable substitution*, would have its derivatives equal to zero at that point. This possibility has just been ruled out for many cases, using various substitutions. If there is a solution to the problem $\min h(\mathbf{w})$ on S, it is not in the interior of S in many cases, and so it must be on the boundary of S in those cases, making itself an *extreme* solution. These cases are documented in the examples that follow.

We see that the procedure which seemed more natural is, on the contrary, more artificial. It does not always have a unique solution, and if it does have a solution, the solution is in many cases too extreme to be a good model of customers' preferences – it does not take into account all the criteria.

3. Examples

What follows is a series of examples working with four different criteria. In the examples, we find the weights, using the approach proposed in the paper. We also use the Solver module of the Excel spreadsheet programme to see that the procedure is correct. The computer result serves as an empirical verification of the validity of the explicit and existing mathematical solution. The weights in the examples are also found by the alternative approach, using the Solver. The examples show that all the points presented in the paper hold: our explicit formulas for calculating the weights and the extreme or unnatural character of the solution provided in many cases by the alternative approach.

3.1 Example 1

Set $\mathbf{c} = (7, 5, 2, 9)$, $\mathbf{b} = (5.2, 2.7, 1.1, 6.4)$, i.e. $\mathbf{a} = (a_1, a_2, a_3, a_4) = (3.24, 5.29, 0.81, 6.76)$. We have

$$\begin{pmatrix} w_1^* \\ w_2^* \\ w_3^* \end{pmatrix} = A^{-1} \cdot \begin{pmatrix} a_4 \\ a_4 \\ a_4 \end{pmatrix} = \begin{pmatrix} 10 & 6.76 & 6.76 \\ 6.76 & 12.05 & 6.76 \\ 6.76 & 6.76 & 7.57 \end{pmatrix}^{-1} \cdot \begin{pmatrix} 6.76 \\ 6.76 \\ 6.76 \end{pmatrix} = \begin{pmatrix} 0.164156 \\ 0.100542 \\ 0.656624 \end{pmatrix}$$

and $w_4^* = 1 - w_1^* - w_2^* - w_3^* = 0.078678.$ These are also the values returned by the

Solver. If the same product feature levels were used to find the weights with the alternative approach, the alternative approach would give the result $(\tilde{w}_1, \tilde{w}_2, \tilde{w}_3, \tilde{w}_4) = (0, 0, 1, 0)$ according to the Solver.

To catch up with the competition, we are solving the problem $\min_{\mathbf{c}_{\text{new}}} \mathbf{P}(\mathbf{c}_{\text{new}} - \mathbf{b})'$ subject to $\mathbf{w}^* \mathbf{c}'_{\text{new}} \geq \mathbf{w}^* \mathbf{c}', \mathbf{c}_{\text{new}} \geq \mathbf{b}$, where the vector of expenses $\mathbf{P}$ is known and specified beforehand. Let us assume for our illustrative purposes that $\mathbf{P} = (50, 30, 40, 45)$. Then the linear problem is optimized for the proposed weights by the vector $\mathbf{c}_{\text{new, optimal}} = (5.2, 2.7, 3.11, 6.4)$, the result being obtained by the Solver, for instance, and the cost of the change amounts to 80.5 currency units.

3.2 Example 2

Setting the vectors of product features $\mathbf{c} = (3.56, 8.12, 7.81, 4.35)$, $\mathbf{b} = (2.18, 7.15, 6.13, 3.03)$, i.e. $\mathbf{a} = (a_1, a_2, a_3, a_4) = (1.9044, 0.9409, 2.8224, 1.7424)$, gives the weights

$$\begin{pmatrix} w_1^* \\ w_2^* \\ w_3^* \end{pmatrix} = A^{-1} \cdot \begin{pmatrix} a_4 \\ a_4 \\ a_4 \end{pmatrix} = \begin{pmatrix} 3.6468 & 1.7424 & 1.7424 \\ 1.7424 & 2.6833 & 1.7424 \\ 1.7424 & 1.7424 & 4.5648 \end{pmatrix}^{-1} \cdot \begin{pmatrix} 1.7424 \\ 1.7424 \\ 1.7424 \end{pmatrix} = \begin{pmatrix} 0.208692 \\ 0.422398 \\ 0.140814 \end{pmatrix}$$

and $w_4^* = 1 - w_1^* - w_2^* - w_3^* = 0.228096.$ These are also the values returned by the Solver. If the same product individual evaluations were used to find the weights with the alternative approach, the alternative approach would give the result $(\tilde{w}_1, \tilde{w}_2, \tilde{w}_3, \tilde{w}_4) = (0, 1, 0, 0)$ according to the Solver.

As earlier, we need to change the product features to $\mathbf{c}_{\text{new, optimal}} = (2.18, 10.075, 6.13, 3.03)$ for 87.74 currency units if the proposed weights are used, and we want to stay competitive.

Conclusions

This paper dealt with the desire to establish product features that would lead to a *competitive* product. What is competitive and what is not is entirely defined by customers, therefore companies can only guess at this definition, or put another way, they can only *model the customers' behaviour*. A very natural model exists in the framework of multicriteria decision-making, which evaluates the whole product with a weighted average, the weights in the average being defined by the customer, and the averaged terms being values of the individual features of the product. These values are what makes up the product design. The paper presented a way of modelling the weights, which are otherwise usually unknown, so that companies could adopt changes to their product features and make them more competitive. Such a model of weights reflects a specific behaviour of the customer, and can be used in instances when companies believe that this behaviour could be in place. These instances include situations when the customer's evaluation of two products is very similar. This happens, for example, when a company begins to leave the stage of saturation in its business cycle. The approach of modelling the weights was compared to another approach that perhaps crosses one's mind in a more straightforward way, and can be thus considered more natural. The paper has shown, however, that the opposite will often be true, and the alternative approach will often be unsuitable for such modelling purposes.

At the very end of the analysis it is also necessary to note that customer satisfaction depends not only on the product itself, but also on pre-production and post-production services for which alternative ways of improvements would probably be more appropriate, given the qualitative rather than quantitative character of the services. Such alternative procedures include, for instance, techniques derived from Taguchi methods [13], [14].

Appendix

We shall prove the statement: if $a_i, i = 1, 2, \ldots, k$, $k > 1$, are positive numbers, the symmetric matrix (1) is positive definite, and thus has an inverse, as well. To show the validity of this statement, we use induction. For $k = 2$ and $k = 3$, the corresponding determinants of (1) are positive, and the statement for such k follows from the Sylvester's criterion [4]. Let us assume the statement holds for every integer from 2 up to an integer $k = n - 1, n \geq 4$, and let us show that if this is the case, the statement also holds for the subsequent integer $k = n$, i.e. the matrix

$$A = \begin{pmatrix} a_1 + a_n & a_n & \cdots & a_n \\ a_n & a_2 + a_n & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-1} + a_n \end{pmatrix}$$

is positive definite. Subtracting the second-to-last row of A from the last row of A implies

$$\det A = \begin{vmatrix} a_1+a_n & a_n & \cdots & a_n \\ a_n & a_2+a_n & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-1}+a_n \end{vmatrix} =$$

$$= \begin{vmatrix} a_1+a_n & a_n & \cdots & \cdots & a_n \\ a_n & a_2+a_n & \cdots & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ 0 & 0 & \cdots & -a_{n-2} & a_{n-1} \end{vmatrix} =$$

$$= \underbrace{a_{n-1}\cdot(-1)^{2n-2}\cdot\begin{vmatrix} a_1+a_n & a_n & \cdots & a_n \\ a_n & a_2+a_n & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-2}+a_n \end{vmatrix}}_{D_1} +$$

$$+ \underbrace{(-a_{n-2})\cdot(-1)^{2n-3}\cdot\begin{vmatrix} a_1+a_n & a_n & \cdots & \cdots & a_n \\ a_n & a_2+a_n & \cdots & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-3}+a_n & a_n \\ a_n & a_n & \cdots & \cdots & a_n \end{vmatrix}}_{D_2} =$$

$$= D_1 + D_2 .$$

The term D_1 is positive, since a_{n-1} is positive by assumption, $2n-2$ is even for any integer n, and the determinant appearing in D_1 is positive by the induction assumption. As for the term D_2, subtracting the second-to-last row of the matrix appearing in D_2 from its last row, we have

$$\begin{vmatrix} a_1+a_n & a_n & \cdots & \cdots & a_n \\ a_n & a_2+a_n & \cdots & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-3}+a_n & a_n \\ a_n & a_n & \cdots & \cdots & a_n \end{vmatrix} =$$

$$= \begin{vmatrix} a_1+a_n & a_n & \cdots & \cdots & a_n \\ a_n & a_2+a_n & \cdots & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-3}+a_n & a_n \\ 0 & 0 & \cdots & -a_{n-3} & 0 \end{vmatrix} =$$

$$= -a_{n-3}\cdot(-1)^{2n-5}\cdot\begin{vmatrix} a_1+a_n & a_n & \cdots & \cdots & a_n \\ a_n & a_2+a_n & \cdots & \cdots & a_n \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ a_n & a_n & \cdots & a_{n-4}+a_n & a_n \\ a_n & a_n & \cdots & \cdots & a_n \end{vmatrix}.$$

Repeating this procedure, we see that

$$D_2 = \underbrace{(-a_2)\cdot(-a_3)\cdot\ldots\cdot(-a_{n-2})}_{n-3 \text{ terms}}\cdot\underbrace{(-1)^5\cdot(-1)^7\cdot\ldots\cdot(-1)^{2n-3}}_{n-3 \text{ terms}}\cdot$$

$$\cdot\begin{vmatrix} a_1+a_n & a_n \\ a_n & a_n \end{vmatrix}.$$

$$D_2 = (-1)^{n-3}\cdot\left(\prod_{i=2}^{n-2} a_{n-i}\right)\cdot(-1)^{5+7+9+\ldots+(2n-3)}\cdot a_1\cdot a_n .$$

The sign of D_2 depends only on the expression $(-1)^{n-3}\cdot(-1)^{5+7+9+\ldots+(2n-3)}$. If n is even, $n>5$,

$$(-1)^{n-3}\cdot(-1)^{5+7+9+\ldots+(2n-3)} = (-1)^{n-3}\cdot(-1)^{5+(n+2)(n-4)} > 0 ,$$

since $(n-3)+5+(n+2)\cdot(n-4)$ is even. If n is odd, $n\geq 5$,

$$(-1)^{n-3}\cdot(-1)^{5+7+9+\ldots+(2n-3)} = (-1)^{n-3}\cdot(-1)^{(n+1)(n-3)} > 0 ,$$

since $(n-3)+(n+1)\cdot(n-3)$ is even again. The determinant of A is therefore positive in either case, implying that A is positive definite by the Sylvester's criterion.

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Abstract

MULTICRITERIA DECISION-MAKING WEIGHTS AND A COMPETITIVE PRODUCT DESIGN

Filip Tošenovský

The paper presents a general way of improving product features so that products were more competitive. The presented concept first represents the general standard of a product to be improved by a weighted average of the product feature levels, thus drawing on concepts from multicriteria decision-making theories. The paper then models the weights appearing in the average so that the average could be calculated, and the product could be improved, achieving at the same time that the modelled weights reflect a specific behaviour of the customer who is the ultimate judge of the product quality or standard. The reason for doing so is the fact that it is the customer who defines the weights which attach importance to each product feature. Since the behaviour of the customer is unknown, the weights are unknown, and must be modelled. If the weights are modelled in such a way that the resulting model reflects a specific customer behaviour, companies may refer to this model, when improving their products, provided there are reasons to believe that such a specific customer behaviour is occurring in the market. The approach to modelling the weights presented in the paper is compared to another approach for finding the weights, the alternative approach offering itself as a more natural way for these purposes. The paper shows, however, that the alternative approach lacks some desirable properties that the approach proposed in the paper is able to provide. The concepts presented in the paper are proved generally, using known mathematical optimization techniques, and the proved theory is accompanied by examples which support the validity of the general statements.

Key Words: *Product evaluation, weighted average, weights, optimization, weight interpretation, cost-effective product improvement.*

JEL Classification: *C02, C61, L15, L21, M11, M21, O14, O32.*

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THE BUSINESS ENVIRONMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES IN SELECTED REGIONS OF THE CZECH REPUBLIC AND SLOVAKIA

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Introduction

The business environment of small and medium-sized enterprises (SMEs) is a current area of theoretical research and practical applications in the European Union. The financial crisis and the gradual recovery of the economies in the European Economic Area brought about a deterioration of the business environment. It can be assumed that business risks have increased due to turbulence in the economic system. SMEs are currently operating in a more demanding economic environment, and many of them are struggling to survive.

The fundamental prerequisite for successful management and the development of all businesses is a favourable business environment in which the state supports and protects economic competition, creates clear and stable rules, and effectively ensures compliance by all market participants while minimizing administrative barriers towards entrepreneurs. A positive perception of the business situation by society might mean a greater interest in starting a business, which can further lead to a higher rate of GDP and higher employment rates. Generally, it is the prevailing opinion that countries with better conditions for doing business achieve also a higher standard of living.

In this article, the current situation of the business environment of SMEs in selected regions of the Czech Republic and Slovakia has been examined. Our research was dealing with socio-economic parameters of the business environment such as motivational factors, status in society, level of corruption, business risks, approach to debt finance, ability to manage financial risks and business optimism.

1. Theoretical Aspects of SMEs Business, the Business Environment, Risks, Debt Financing of SMEs

SMEs have become an increasingly important component of economic development, representing a substantial proportion of national economies worldwide [21]. In this context, Henderson and Weiler indicate that SMEs can be characterized as a major engine of economic growth. [20]

The European Commission [11, p. 4] states that “the source of lifeblood” of the European economy lies in 23 million small and medium-sized companies which represent more than 98% of the business community. They provide two-thirds of the total employment in the private sphere, and over the last five years, they have created approximately 80% of new jobs.

SMEs play an important role in the economic systems of the Czech Republic and Slovakia. In 2012, the share of SMEs in the total number of active enterprises in the Czech Republic was 99.86% while the share of added value was 53.81%. The share of SME employees in the total employment in the business sector in the Czech Republic was 59.43% in 2012. [31] In Slovakia, the share of SMEs in the total number of active enterprises was 99.2%; in the total employment it was 59.5%. The share of added value was 55.6% and the share of SMEs in the profit before taxes was 51.6%. [35]

Entrepreneurial orientation is important for SMEs. Soininen et al. [41] consider innovativeness, risk-taking and proactivity as the basic characteristics of entrepreneurial orientation. Their results do not support the assumption that entrepreneurial orientation is positively related to the profitability of small

firms. On the other hand, there is a positive relationship between the entrepreneurial orientation of a firm and a firm´s rate of growth.

According to Eggers et al. [10], to drive growth, a firm will need to deploy a strategy centred on entrepreneurial orientation. Authors indicated that entrepreneurial orientation is positively related to SME growth, but customer orientation shows a negative association with the growth. Anderson and Eshima [2] examined the influence of the firm age and intangible resources on the relationship between the entrepreneurial orientation and the firm growth. [42]

Hamilton argues that initial employment size, rather than age, was found to have some bearing on the nature of the growth path. Smaller firms grew more often and with more continuity than larger firms. In larger firms, the growth occurred in relatively large isolated steps with little continuity. [18]

Avlonitis and Salavou note that active entrepreneurs do not like passive entrepreneurs and adopt a more aggressive orientation characterized by the willingness to undertake an action of high risk before their competition. Nonetheless, proactiveness contrary to risk-taking is found to be an important contributor to the performance of new products introduced by both groups. [4]

Lasagni investigated the role of external relationships as key drivers of small business innovation. Her results indicate that innovation performance is higher in SMEs that are proactive in strengthening their relationships with innovative suppliers, users, and customers. [27] In this context, Kraus et al. state that innovative SMEs do perform better in a turbulent environment. [25]

Keh, Nguyen and Ng examined the influence of entrepreneurial orientation and marketing information on the performance of SMEs and indicated that entrepreneurial orientation plays an important role in enhancing firm performance. Information utilization has a positive impact on firm performance, and there is a positive relationship between information utilization and making marketing decisions and the subsequent firm performance. [22]

A wide range of authors deal with SME management, e.g. [30], [33] According to Fetisovová, Vlachynský and Sirotka, basic business risks of SMEs include, e.g., limited access to loans, small capital strength, increased competition, high tax and levy burden, low level of management skills, low level of diversification, administrative complexity, risk of failure, and connection between work and private life. [13] In this context, Hasle et al. state that most owner-managers take a positive approach to the working environment, but also try to "talk risk down," criticize regulation as bureaucracy and place part of the employer responsibility onto the employees. [19]

The Association for Financial Professionals in collaboration with Zanders Treasury and Finance Solutions conducted in 2013 an international survey called the Treasury Risk Survey, which was focused on global trends in corporate risk management. According to this survey, among the most serious threats to European companies are liquidity risk, foreign currency risk and reputation risk. Great attention is paid to business and counterparty risk – whether it is represented by credit risk related to customers or by the financial stability of suppliers, banks and other providers of funding. [6]

A particularly important issue to SMEs is the financial gap produced by their limited access to external financing. Even before the economic downturn, some of the small businesses had troubles obtaining the funds necessary for growth and innovation. Due to the financial crisis, banks are even less willing to lend to companies in many countries, which further exacerbated the problems SMEs were already facing. [11]

In this context, Dierkes et al. argue that SMEs are smaller, more informationally opaque, riskier, and more dependent on trade credit and bank loans. [8] According to Canales and Nanda, small businesses, and particularly young small businesses, have little internal cash flow to finance their operations and are also associated with significant asymmetric information. [5]

According to Majková-Sobeková, the high risk of SMEs is characterized by a high level of debt and a limited capacity to guarantee. As such, the acquisition of commercial loans for such companies is highly problematic. [29] In this context, Di Giuli, Caselli and Gatti report that for SMEs, credit availability is a vital developmental element. [9]

According to Neuberger and Räthke, micro-enterprises are especially predisposed to incorrect selection and moral hazard, and therefore their access to debt financing is limited. Small firms are characterized by higher

information asymmetry and credit risk. [37] This opinion is confirmed by Kirschenmann and Norden, who argue that information asymmetry and bargaining power are especially important in small business lending because small firms are informationally opaque and bank-dependent. [23]

Moro and Fink reported that banks play an essential role in financing firms, especially SMEs, since they have more difficulty accessing equity capital markets. The process used by banks to decide whether and how much to lend relies on different lending technologies, and banks usually tend to use more than one technology at once. [34]

Business activities are significantly determined by the environment of the company, which forces it to use a particular method of behaviour and to choose particular business goals and ways of achieving them. In this context, important roles are played by the social environment and the political and legal environments that are created by the state authorities. Presumably, a positive perception of these companies by their environment could stimulate their financial performance and accelerate the positive influences of these companies on society.

2. The Study's Aim, Methodology and Results

The aim of this article was to define and compare current trends in the business environment of small and medium-sized enterprises in selected regions of the Czech Republic and Slovakia. In accordance with the objective, motivational factors, status in the society, level of corruption, current business risks, the approach to loan financing, the ability to manage financial risks and business optimism in the business environment have been examined.

The research of the business environment was conducted in 2013 in the select regions of the Czech Republic and Slovakia through a questionnaire. In the Zlin Region (ZL) of the Czech Republic, 180 SMEs were contacted; in the Zilina Region (ZA) of Slovakia, 164 SMEs were contacted; and in the Trencin Region (TN) of Slovakia, 105 SMEs were contacted. Each company's data was provided by their owners. In the Zlin Region, there were 107,000 SMEs in 2012. In the Zilina Region, there were 72,512 SMEs in 2012. In the Trenčín Region were 55,722 (including self-employed). [31], [32]

These regions have been chosen because of their common national border, long-term intensive economic cooperation and similar economic parameters. But at the same time, these regions are parts of different countries, allowing us to compare the effectiveness of economic policy towards SMEs in these regions.

The Zlin Region has an area of 3,964 km^2 and about 600,000 inhabitants. In 2012, the GDP per capita was about 11,720 EUR, and the unemployment rate was about 8%.

The Zilina Region has an area of 6,800 km^2. The total population is approximately 700,000 and the population density is 102 inhabitants per km^2. The unemployment rate increased to 11.91% in 2011. The GDP per capita that year was 10,794 EUR.

The Trencin Region has an area of 4,502 km^2 and has about 600,000 inhabitants. The GDP per capita reached 10,744 EUR in 2010 (88.57% of the average GDP per capita in Slovakia), and the registered unemployment rate was at 10.89% in 2012 (significantly below the national average of 14.44%). This region has a strong industrial tradition, reflected in the fact that the share of the industry on GDP reached the level of 33.96% in 2010 which significantly exceeded the national average of 26.46%. However, this region is struggling with transformation problems and needs to increase dynamic adaptation to the knowledge economy conditions particularly in the sectors of information, communication, technical, scientific and administrative services. The share of these sectors in the GDP formation reaches only 7.85%, which is substantially lower than the share of these sectors which contributes to the GDP formation of Slovakia (12.26%).

In our research on the Zlin Region, the largest share of SMEs was operating in trade activities (35%), followed by manufacturing companies (29%), construction firms (12%), transport companies (4%), and agricultural enterprises (3%). The remaining share was formed of companies operating in other sectors.

In the Zilina Region, the structure of companies was as follows: 17% of companies operated in the manufacturing sector, 21% in the trade sector, 17% in the construction sector, 6 % in the transport sector, 1% in the agricultural sector. The largest portion of companies operated in other sectors (38%).

In the Trencin Region, the structure of companies was as follows: manufacturing

companies (21%), trade companies (21%), construction companies (18%), transport companies (4%) and agricultural firms (5%). The largest portion of companies operated in other sectors (31%).

From the total number of 180 surveyed firms in the Zlin Region, 70% of them were doing business more than 10 years, 21% of them between 5 and 10 years, and 9% of them between 1 and 5 years. Therefore, the study was examining quite experienced entrepreneurs. The age structure of companies was as follow: 58% were micro-enterprises, 31% were small enterprises and 11% were medium-sized companies.

From the total number of 164 surveyed firms in the Zilina Region, 38% were doing business more than 10 years, 32% of them between 5 and 10 years, 30% of them between 1 and 5 years. Therefore it can be stated that companies were equally distributed regarding the length of doing business. The age structure of companies was as follows: 66% were micro-enterprises, 20% were small enterprises and 14% were medium-sized companies.

From the total number of 105 surveyed companies in the Trencin Region, 54% of the companies had been in business more than 10 years, 25% from 5 to 10 years, and 21% from 1 to 5 years. The size structure of the companies was as follows: 62% were micro-enterprises, 31% were small enterprises and 7% were medium-sized enterprises.

In our research, we examined if there were statistically solid differences in several attributes among SMEs in the selected regions of Slovakia and the Czech Republic according to their field, age and size. In detail, we quantified the differences between the trading companies and the others, between the companies over 10 years old and the others and between the micro-enterprises and the others.

The business environment is determined by personal characteristics and motives of individual entrepreneurs. Creativity, risk taking and independence increase the probability of becoming an entrepreneur and decrease the probability of becoming an employee. [24]

Almeida, Ahmetoglu, and Chamorro-Premuzic show that the META model (Awareness, Vision, Creativity, and Opportunism) is the strongest and the most consistent predictor of an entrepreneurial activity. Entrepreneurial individuals are characterized primarily as enterprising and creative, and to some degree as social and investigative. [1]

According to the survey of PwC, the major motivations among Czech entrepreneurs to run one´s own business are the wish to be free in decisions and a passion for the field of business. Only after these attributes were financial motivation, success and prestige mentioned. [39] A survey by GE Money Bank listed these as the most important motivations: desire for money, flexible working hours, a certain lifestyle and the necessity of independence. [14]

In line with previous findings, we hypothesize the following:

H1: The major motivation to run one´s own company in the region of Zlin is money.

H1a: There exist no significant differences in the motivation to run one´s own business between the regions of Zlin and Zilina and between the regions of Zlin and Trencin.

H1b: Less than 20% of entrepreneurs in the region of Zlin started their own business because they perceive it as their mission.

H1c: Less than 20% of entrepreneurs in the regions of Zilina and Trencin started their own business because they perceive it as their mission.

H1d: Money as the motivation to run one´s own business is assessed the same, irrespective of the field, the age and the size of a company.

Various surveys show the perception of entrepreneurship by society is still relatively negative in Slovakia and the Czech Republic. For instance, according to the survey of the National Agency for Development of Small and Medium Enterprises, 69.9% of respondents think entrepreneurs in Slovakia just try to quickly achieve as high profits as possible, 78.2% believe entrepreneurs are getting rich by taking advantage of ordinary people and are abusing their employees. [36] GfK Czech (2013) argues that 45% of the Czech inhabitants perceive entrepreneurs in a negative way. [16]

Therefore, we hypothesize the following:

H2: There are no statistically significant differences in the perception of entrepreneurs by society between the regions of Zlin and Zilina and between the regions of Zlin and Trencin.

H2a: Less than 10% of entrepreneurs in the region of Zlin think that society perceives them positively.

H2b: The assessment of positive perception of entrepreneurship by society is the same,

irrespective of the field, the age and the size of a company.

The relationship between the state and entrepreneurs is complicated in the long run, as these entities have opposite ideas about how to manage the economy.

Entrepreneurs generally evaluate the approach of the state to their needs and interests negatively. As it was revealed in a survey by the web server Podnikatel.cz (2013), most business owners spend even entire days filling out forms. The vast majority of entrepreneurs believe that the talk of reducing administrative burdens in the Czech Republic is meaningless. According to 59% of Czech businessmen, the bureaucratic burden has been increasing in recent years. [38]

The study of the World Bank called Doing Business 2014 presents the current situation of the business environment in the Czech Republic, and also the development of this situation. In the overall ranking, the Czech Republic has fallen 7 points in the last year to 75th place, ending up just behind Romania and the Republic of Vanuatu. All of the Czech Republic's neighbours were ranked higher: Slovakia was ranked 49th, Poland 45th, Austria 30th and Germany 21st. Furthermore, the Czech Republic also has a disastrous outcome in assessing the ease and cost of starting a business. Out of 189 countries, the Czech Republic was ranked in 146th position, a drop of 6 points in comparison to the previous year. To start a business in the Czech Republic, you must undertake an average of 9 procedures. The average value for OECD at the same time is 5 procedures. In the Czech Republic, you can create a company in 19.5 days, whereas the OECD average value is 11 days. [38]

The business environment in Slovakia was negatively perceived by 56% of companies in 2013. This was determined by an economic survey conducted by the Slovak Chamber of Commerce among its members. [40]

Based on this, we hypothesize the following:

H3: There exist no significant differences in the opinions of entrepreneurs about the state attitude to their needs between the regions of Zlin and Zilina and between the regions of Zlin and Trencin.

H3a: Less than 10% of entrepreneurs in the region of Zlin uphold that the state fulfils its duties and helps them in their activities.

H3b: The intensity of positive assessment of the state activities by entrepreneurs is the same, irrespective of the field, the age and the size of a company.

Corruption represents a serious problem in both countries. According to the reports of the Security and Intelligence Service of the Czech Republic (BIS), there exist widespread corruption activities and the ciphering off of public funds by private parties through outsourcing, projects of public and private sector partnerships, the manipulation of public contracts and the misuse of European subsidies in the country. These activities, however, could not exist without considerable help from politicians in both countries. [17] According to a survey by the Association of Small and Medium Entrepreneurs and the Self-Employed of the Czech Republic, 59.3% of entrepreneurs think it is not possible to obtain a public contract in the Czech Republic without giving special provisions or bribes. The average provision was 15.7% of the amount of the contract. [3] Moreover, a survey by Ernst & Young indicated that 69% of Czechs consider corruption in running one´s business to be a widespread phenomenon. [28]

According to Transparency International, the Czech Republic in perception of corruption occupied 54th place in 2012 (Slovakia was in the 62nd position). These results point out that corruption both in perception and practice is strong in both countries. [17]

Based on these findings, we hypothesize the following:

H4: The perceived degree of corruption in the region of Zlin is lower than in the regions of Zilina and Trencin.

H4a: At least 50% of entrepreneurs in the region of Zlin have experienced corruption and cronyism in their business activities.

H4b: The perception of corruption by entrepreneurs in the selected regions is the same regardless the field, the age and the size of a company.

According to Fetisovová et al., the financial and economic crisis has had serious implications on the performance of small and medium-sized companies in the European Union. In 2009, the gross production of SMEs within the EU27 decreased by 5.5%. Insufficient effective demand was the most urgent issue for

29% of these SMEs. The authors report that the demand in the domestic markets of the EU27 will remain weak. [12]

A particularly important problem of SMEs is a financial gap since many of these companies have limited access to external financial sources. Even before the economic downturn, some small businesses were having trouble accessing the funds necessary for growth and innovation. As a consequence of the financial crisis, banks in many countries are even less willing to lend to businesses, which further escalates the problems faced by companies. [11] According to Fetisovová et al., the approach to financial resources for SMEs represents a serious problem for SMEs. However, in the short term, it is less urgent than the lack of demand on domestic markets. [12]

The global financial crisis has caused considerable concerns about what the banks' practices will be in relation to the loan financing of the corporate sector. The current signals confirm that banks in the Czech Republic and Slovakia have tightened the conditions for their clients. A highly unfavourable situation can be observed from the perspective of companies because of restrictions on the business community in relation to financing by bank instruments. [15] In this context, Cowling, Liu, and Ledger state that generally, loans were more readily available to larger and older firms throughout the recession. At its peak, 119,000 (10% of the total stock) smaller firms in the UK were denied credit in a three-month period. [7]

As a consequence of such findings, we hypothesize the following:

H5: The most important business risk in all regions is, according to entrepreneurs, the market risk.

H5a: The average value of the market risk in the region of Zlin is higher than 40%.

H5b: Entrepreneurs in the region of Zlin are facing a market risk less intensive than entrepreneurs in the regions of Zilina and Trencin.

H5c: The evaluation of the market risk by entrepreneurs is the same irrespective of the field, the age and the size of a company.

H6: In the region of Zlin, the average decrease in the performance of SMEs is at least 15% in comparison to the period before the crisis.

H6a: There exist no significant differences in the structure of performance decrease of SMEs between the regions of Zlin and Zilina and between the regions of Zlin and Trencin.

H6b: The structure of performance decrease of SMEs is not correlated with the field, the age and the size of a company.

H7: The entrepreneurs in the selected regions assess the approach of banks to their financial needs at the same level.

H7a: Less than 50% of entrepreneurs in the region of Zlin think that banks accept their needs and behave in an appropriate way.

H7b: The positive assessment of the banks´ behaviour by entrepreneurs does not depend on the field, the age and the size of a company.

The financial crisis has significantly changed the view on risk management in the SME segment in European countries, including Slovakia. Based on many studies dealing with corporate management in Slovakia and published during the crisis, the most common failures, which can substantially affect the potential ability of a company to survive during the crisis, were for example mismanagement of cash flows or insufficient management of financial risks, i.e., the lack of an early warning from the financial manager. [26]

Based on this, the following hypotheses were formulated:

H8: The evaluation of the entrepreneurs´ abilities to manage risks is the same in all the selected regions.

H8a: At least 90% of entrepreneurs in the region of Zlin think they can manage financial risks in their companies properly.

H8b: Entrepreneurs in the region of Zlin are more self-assured they can manage financial risks compared to entrepreneurs in the regions of Zilina and Trencin.

H8c: The perceived ability to manage financial risks in a company does not depend on the field, the age and the size of a company.

According to PwC, nearly 70% of the owners of Czech companies expected growth of their businesses in the short term. This growth should have been achieved through the acquisition of new customers and the further penetration of existing clients. Entrepreneurs explained that the biggest threat to their growth is the existence of intense low-cost competition, which they will compete with by producing higher quality products and taking better care of their customers. [39]

Therefore, we hypothesize the following:

H9: The optimism among entrepreneurs is the same in all the selected regions.

H8a: At least 90% of entrepreneurs in the region of Zlin believe their company will survive the next five years.

H9b: The optimism among entrepreneurs is at higher levels in the region of Zlin than it is in both selected Slovak regions.

H9c: The level of optimism among entrepreneurs does not depend on the field, the age and the size of a company.

The associations in contingency tables were analysed by Pearson statistics for count data.

The P-value is being compared with the standard 5% confidence level. A P-value lower than the confidence level leads to the rejection of the null hypothesis. The null claims there is no association between variables. Calculations have been performed using statistical packages XL Statistics and R. Finally, instruments of descriptive statistics, such as percentages and averages have been used.

3. Results

Firstly, the motivation to start one´s own business has been investigated. The obtained results and their comparison are shown in the Table 1.

Tab. 1: Motivation to start a business in the Czech Republic (CR) and Slovakia (SR

What was your motive for starting a business?	CR (ZL) in %	SR (ZA) in %	SR (TN) in %	p-value ZL:ZA/ ZL:TN
1. Money	21.11	48.78	38.10	*<0.01/ <0.01*
2. I perceive it as a mission	20.56	10.98	12.38	0.0230/0.1121
3. I wanted to have a job	*29.44*	21.95	26.66	0.1438/0.7148
4. I had no choice	10.00	7.92	11.43	0.6297/0.8579
5. Other reasons (independence, flexibility, etc.).	18.89	10.37	11.43	*0.0385*/0.1377
p-value<*0.01/0.0165*				

Source: own

The results of our research show that the major motive for starting one´s own business in the region of Zlin is the wish to have a job. Thus H1 was not confirmed. Moreover, our research demonstrated statistically significant differences in the motives to start a business between the regions of Zlin and Zilina (p-value<0.01) and between the regions of Zlin and Trencin (p-value=0.0165). The most important driver to start one´s own business is money in both selected Slovak regions (p-value in both cases <0.01). Entrepreneurs of the Zlin Region stated more often than entrepreneurs of the Trencin Region that they perceive their business as their mission (p-value=0.0230). H1a was not confirmed. H1b was not confirmed either, as the p-value was calculated at 0.5371. On the contrary, p-values for the Zlin Region (0.0110) and the Trencin Region (0.0336) confirmed the validity of H1c, which means that less than 20% of entrepreneurs in both regions started their business because they perceive it as their mission.

H1d was partially confirmed. We found no statistically significant differences in the assessment of money as the major driver of running one's own business between the trading companies and the others, between the companies over 10 years old and the others and between the micro-enterprises and the others. The only exception was found among younger companies in the Zlin Region. The companies under 10 years old stated money as the major motive for starting their business more often than the other companies (p-value=0.0063).

The status of an entrepreneur was examined in the following questions. The results are shown in Tables 2 and 3.

Tab. 2: How entrepreneurs are perceived by society in the Czech Republic and Slovakia

Do you think that our society (politicians, public opinion, media) perceive the position and activities of entrepreneurs correctly?	CR(ZL) in %	SR(ZA) in %	SR(TN) in %	p-value ZL:ZA/ ZL:TN
1. No, our society perceives us negatively	20.56	15.85	20.95	0.3238/1.0000
2. Society perceives us incorrectly	42.22	43.30	55.24	0.9272/*0.0454*
3. Society perceives us positively	7.78	6.70	1.90	0.8618/0.0701
4. I am not thinking about it	29.44	34.15	21.91	0.4121/0.2114
p-value=0.6165/*0.0485*				

Source: own

The results shown in Table 2 confirmed there are significant differences in the perception of entrepreneurs by society between the Zlin and Trencin Regions (p-value=0.0485). Differences between the Zlin and Zilina region were not found (p-value=0.6165) in this issue. H2 was partially confirmed.

On the basis of the calculated test criteria (p-value=0.1923), we argue that the rate of entrepreneurs thinking society perceives them positively in the Zlin Region is higher than 10%. H2a was not confirmed. To compare, the rate of entrepreneurs that think society perceives them positively is more than 10% (p-value=0.1011) in the region of Zilina and is lower than 10% in the region of Trencin (p-value<0.05).

H2b was confirmed. The companies think society perceives them positively regardless of the field, the age and the size of a company.

Tab. 3: The state approach towards entrepreneurs' needs in the Czech Republic and Slovakia

How do you assess the state attitude to entrepreneurs' needs?	CR(ZL) in %	SR(ZA) in %	SR(TN) in %	p-value ZL:ZA/ ZL:TN
1. I feel the state is just bullying us	42.22	53.05	54.29	0.0574/0.0649
2. The state is not fulfilling its duties	42.22	38.41	40.95	0.5427/0.9321
3. The state is fulfilling its duties	12.78	5.49	4.76	*0.0324/0.0469*
4. The state helps us in our business activities	2.78	3.05	0	1.0000/–
p-value=0.0605 */0.0170*				

Source: own

The results of the research stated in Table 3 point out significant variations in the opinions of entrepreneurs of the Zlin Region and the Trencin Region (p-value=0.0170). Although there were solid differences between entrepreneurs of the Zlin Region and the Zilina Region, these were not statistically significant (p-value=0.0605). As a result, H3 was not confirmed.

Judging from the calculated p-value at 0.9900, we cannot argue that less than 10% of entrepreneurs in the Zlin Region think the state fulfils its duties and helps the business sector. H3a was not confirmed.

On the other side, H3b was confirmed. The intensity of the positive assessment of the state activities by entrepreneurs (line 3 and line 4 in the Table 3) is the same in the selected regions regardless of the field, the age and the size of a company.

The level of corruption was examined through one question, answers to which are presented in Table 4.

Tab. 4: Entrepreneurs' perception of the corruption

Have you ever experienced the corruption and cronyism in your business activities?	CR(ZL) in %	SR(ZA) in %	SR(TN) in %	p-value ZL:ZA/ ZL:TN
1. yes	53.33	71.95	75.96	*<0.01/<0.01*
2. no	46.67	28.05	24.04	*<0.01/<0.01*
p-value *<0.01/<0.01*				

Source: own

According to our research, the perception of corruption was different in the Czech Republic and Slovakia. The perceived corruption is at a statistically significant lower level in the region of Zlin than in the regions of Zilina or Trencin. In both cases the p-value was lower than 0.01, thus H4 was not confirmed.

Judging from the calculated p-value (0.2060), it cannot be argued that at least 50% of entrepreneurs from the Zlin Region have experienced corruption and cronyism in their business activities. Consequently, H4a was not confirmed.

However, H4b could be accepted. Our research confirmed the perception of corruption is the same, irrespective of the field, the age and the size of a company.

Table 5 shows the results of the survey concerning business risks of SMEs in the selected regions of the Czech Republic and Slovakia.

Tab. 5: The identification of business risks in the Czech Republic and Slovakia

Doing your business, you face many risks. Which risks do you consider as currently crucial? (Please provide a maximum of three answers)	CR(ZL) in %*	SR(ZA) in %*	SR(TN) in %*	p-value ZL:ZA/ZL:TN
1. market risk (lack of contracts) Average value** Adjusted average value***	79.44 56.00 *44.49*	80.49 51.30 *41.29*	82.86 53.27 44.14	0.9150/0.5833
2. financial risk (poor approach to company's financing)	57.22	58.54	50.48	0.8910/0.3269
3. operational risk (mishandling of processes)	20.56	22.56	14.29	0.7480/0.2448
4. personnel risk (poor quality staff)	43.33	38.41	47.62	0.4140/0.5631
5. legal risk	30.56	37.20	32.38	0.2350/0.8507
6. safety risk (accidents, incidents, etc.)	21.67	32.93	27.62	*0.0260*/0.3206

Note: * data are calculated as the ratio of respondents which stated given answer to the total number of companies; ** average of values reported by entrepreneurs in individual regions; *** means the average values from the total file

Source: own

The data in Table 5 show the major business risk in all the regions is market risk. The validity of H5 was confirmed. Since the average value of the market risk in the region of Zlin was more than 40%, H5a was confirmed as well. However, H5b was not confirmed, because the entrepreneurs in all the regions perceive the intensity of market risk at the same level. H5c was confirmed: the perception of market risk in the selected regions is the same regardless the field, the age or the size of a company.

Tab. 6: The development of SME performances in the Czech Republic and Slovakia

By what percentage has your current performance decreased compared to the pre-crisis period?	CR(ZL) in %	SR(ZA) in %	SR(TN) in %	p-value ZL:ZA/ ZL:TN
1. up to 10%	17.24	17.07	19.09	1.0000/0.7408
2. 11 to 20%	13.79	20.12	11.43	0.1590/0.7658
3. 21 to 30%	17.24	20.73	20.95	0.4970/0.4667
4. 31 to 40%	10.92	5.49	13.33	0.1070/0.6161
5. 41 to 50%	5.75	6.71	2.86	0.8890/0.6518
6. above 50%	3.45	6.10	3.81	0.3730/0.6518
7. my company's performance has increased	31.61	23.78	25.71	0.1380/0.4441
p-value=0.1855/0.7832				

Source: own

Table 6 presents the decrease of the performance of SMEs (according to their owners) in 2013 compared to the pre-crisis period.

The average decrease in the performance amounted to 15.80% in the Zlin Region (weighted average of upper values of individual intervals). H6 was confirmed. For a better overview, the average decrease in performance was 18.78% in the Zilina Region and 19.53% in the Trencin Region.

The values of test criteria stated in Table 6 (p-value=0.1855/0.7832) confirmed that there are no statistically significant differences between both countries in relation to the decrease or increase in performances. H6a was disproved.

H6b was confirmed as we found out the change of performances of SMEs was not dependent on the field, the age or the size of a company.

The existence of the most important business risks resulted in tighter credit conditions by commercial banks. This trend is also perceived by SMEs, which can be seen in Table 7.

Tab. 7: Commercial banks' approach to SME financing in the Czech Republic and Slovakia

How do you assess banks' approach to the financing of small and medium-sized enterprises?	CR(ZL) in %	SR(ZA) in %	SR(TN) in %	p-value ZL:ZA/ZL:TN
1. Banks fully accept our needs and have a good relationship with us	4.44	3.05	0.95	0.6930/-
2. Banks behave appropriately	38.89	20.12	34.29	*<0.01*/0.5160
3. Banks behave unhelpfully towards us	8.89	14.02	9.52	0.1830/1.0000
4. Banks use too hard criteria for lending	26.11	37.20	43.81	0.0360/0.0030
5. I cannot judge	21.67	25.61	11.43	0.4630/*0.0440*
p-value<*0.01/0.0110*				

Source: own

The results of the research shown in Table 7 have not proved the validity of H7. Entrepreneurs in the region of Zlin assess the approach of commercial banks to their needs differently than the entrepreneurs of the regions of Zilina and Trencin. The values of the test criteria proved this statement (p-value<0.01/0.0110). In more detail, entrepreneurs of the Zlin Region evaluate the approach of commercial banks more positively than entrepreneurs of the regions of Zilina and Trencin. Nonetheless, even entrepreneurs of the Zlin Region do not assess the banks too positively. The calculated p-value (<0.05) pointed that less than 50% of entrepreneurs in the Zlin Region think the banks meet their needs and behave appropriately. As a result, H7a was confirmed.

H7b was partially confirmed. Generally speaking, the positive assessment of the bank approach is not dependent on the field, the age or the size of a company. The only exception was found in the evaluation by the micro-enterprises in the Zlin Region. These enterprises assessed the attitudes of banks less positively than the other enterprises (p-value=0.002).

The ability to manage financial risks has been verified through one question. The results are shown in Table 8.

Tab. 8: The ability of entrepreneurs to manage financial risks in the company

Do you think that you are able to manage financial risks in your company?	CR(ZL) 2013 in %*	SR(ZA) 2013 in %*	SR(TN) 2013 in %*	p-value ZL:ZA/ZL:TN
1. Yes	41.11	23.17	31.43	*<0.01*/0.1323
2. To a certain extent	55.00	67.68	57.14	*0.0210*/0.8183
3. No	0.56	1.83	0.00	-/-
4. I cannot judge	3.33	7.32	11.43	-/-
p-value= due to the small numbers in line 3 and line 4, these values cannot be reliably calculated				

Source: own

H8 was neither confirmed nor disproved as it was not possible to calculate the value of the test criteria.

The validity of H8a was confirmed as the p-value was calculated at the level lower than 0.01. This means that at least 90% of entrepreneurs of the Zlin Region opine they can manage financial risks in their company in an appropriate way.

The results stated in Table 8 enable us to conclude there are statistically significant differences in the opinions of entrepreneurs of the Zlin Region and entrepreneurs of the Zilina Region regarding this issue. Zlin entrepreneurs are more self-confident as to their ability to manage financial risks than Zilina entrepreneurs (p-value<0.01). On the other hand, there were no significant differences in the confidence of Zlin entrepreneurs and Trencin entrepreneurs. Our research confirmed H8b only partially.

Finally, H8c was confirmed. The confidence about the ability to manage financial risks in a company does not depend on the field, the age or the size of a company.

The level of business optimism has been examined through the following question. Results are shown in Table 9.

The validity of H9 was partially confirmed. We found that the structure of answers was similar in the regions of Zlin and Zilina. However, it was not possible to calculate reliably the value of the test criteria for comparing the regions of Zlin and Trencin.

The calculated value of the test criteria (p-value=0.0174) proved that at least 90% of the entrepreneurs in the Zlin Region believe their company will survive the next five years. However, the rate of optimistic entrepreneurs in both selected Slovak regions was lower than 90%. Accordingly, both H9a and H9b were confirmed.

H9c was confirmed as well. Our research proved the level of business optimism in the selected regions is not related to the field, the age or the size of a company.

Tab. 9: The level of business optimism in the Czech Republic and Slovakia

Do you believe that your company will survive the next 5 years?	CR(ZL) 2013 in %	SR(ZA) 2013 in %	SR(TN) 2013 in %	p-value ZL:ZA/ZL:TN
1. Definitely	49.44	40.85	35.24	0.1360/*0.0270*
2. No	0.56	2.44	0.00	0.3140/-
3. With some concerns	45.56	49.39	56.19	0.5430/0.1075
4. With serious concerns	4.44	7.32	8.57	-/0.2461
p-value=0.1784/cannot be calculated correctly				

Source: own

Conclusion

The correct perception of entrepreneurs by society is important for the economic growth of a country. Our research showed that entrepreneurs in the selected regions of the Czech Republic and Slovakia think that society perceives them rather negatively. These opinions in the end influence the motives to start one´s own business and the whole attitude to entrepreneurship. The most important catalyst of starting a business in both selected Slovak regions (Zilina and Trencin) was the desire to make money. On the other hand, the situation was different for the Zlin Region, where a wish to have a job was the most important. Furthermore, our research showed low levels of positive motivation to start a business. The rate of entrepreneurs stating they perceive their entrepreneurship as a mission was only 20.56% in the region of Zlin, 10.98% in the region of Zilina and 12.38% in the region of Trencin.

Entrepreneurs within the selected regions share more-less the same negative opinion about the attitude of the state towards their activities. A significant number of entrepreneurs think the state literally bullies them, i.e., instead of helping them in their activities it creates meaningless barriers and obstacles.

The perception of corruption in both countries is relatively intense. As much as 53.33% of Zlin entrepreneurs, 71.95% of Zilina entrepreneurs and 75.96% of Trencin entrepreneurs declared they had experienced corruption and cronyism in their business activities.

The discussion about the problems of SMEs in the Czech Republic and Slovakia has for a long time been aimed mostly at the issues of levies, the quality of the legal systems and the support of SMEs by the state. Nevertheless, our research showed there have been different priorities for SMEs in recent years. For example, entrepreneurs perceive market risk very intensively. Judging from these findings, it is necessary to create systematic prerequisites for widening the market of SMEs through improving consumer confidence. The decrease of the domestic demand has led to the decline of SME performance over the last few years.

Worsening market conditions for SMEs have also encouraged tighter lending policies by commercial banks. According to our findings, 26.11% of entrepreneurs in the region of Zlin, 37.20% of entrepreneurs in the region of Zilina and 43.81% of entrepreneurs in the region of Trencin think banks use overly strict criteria when giving out loans. Only 4.44% of entrepreneurs in the Zlin Region, 3.05% of entrepreneurs in the Zilina Region and 0.95% of entrepreneurs in the Trencin Region stated banks fully accept their needs and are helpful.

The optimism of economic entities is essential for the proper functioning of the whole economic system. Therefore the results of our research are promising. The majority of Czech and Slovak entrepreneurs believe they can properly manage financial risks in their companies and that their companies will survive the next five years despite the dramatic changes in the business environment resulting in decreases in SME performances in recent years. In more detail, 96.11% of entrepreneurs of the Zlin Region, 90.85% of entrepreneurs of the Zilina Region and 88.57% of entrepreneurs of the Trencin Region declared they can properly manage financial risks in their companies. Moreover, 95% of Zlin entrepreneurs, 90.24%

of Zilina entrepreneurs and 91.43% of Trencin entrepreneurs believe their companies will survive the next five years.

The Czech economy is often compared to the Slovak economy. For instance, Hájek and Režný analysed the development of the Czech economy in comparison to the Slovak economy over the past two decades. The authors report that from the date of the proclamation of the independent Czech and Slovak Republics, the GDP of the Czech Republic has increased by 68%, but the GDP of Slovakia has increased by 128% during the same period. The economy of Slovakia achieved an average annual growth rate of 3.86% in the period 1994–2012. The faster growth in the GDP of Slovakia was based on a lower tax burden, as well as on lower levels of redistribution (the share of public expenditures in the GDP) and more favourable conditions for business. [17]

Our research has also shown that entrepreneurs of the Zlin Region assess the conditions of the business environment more positively than do Zilina and Trencin entrepreneurs. The business environments in these regions have been compared through nine different variables, namely the motives to start a business, the perception of entrepreneurship by society, the support of the state, the perception of the corruption in business activities, the intensity of market risk, the decrease in performances, the approaches of banks to financing SMEs, the ability to manage financial risks and business optimism. In all these areas, entrepreneurs in the Czech region of Zlin evaluate the attributes of running a business more positively than their counterparts from the selected Slovak regions.

Naturally, our research has several limitations. The first is the number of surveyed enterprises; the second is the regional selection of companies. In spite of these limitations we truly believe this research highlights interesting issues to discuss in the process of forming the business environment in the Czech Republic and Slovakia both at regional and national levels.

In the future, we would like to explore the connections among personal features of entrepreneurs, their risk aversion and their financial performance.

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Abstract

THE BUSINESS ENVIRONMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES IN SELECTED REGIONS OF THE CZECH REPUBLIC AND SLOVAKIA

Jaroslav Belás, Valér Demjan, Jozef Habánik, Mária Hudáková, Juraj Sipko

The aim of this article was to define and compare current trends in the business environment of small and medium-sized enterprises in selected regions of the Czech Republic and Slovakia. In accordance with the objective, motivational factors, status in the society, levels of corruption, current business risks, approaches to loan financing, the ability to manage financial risks and business optimism in the business environment have been examined. In 2013, research into entrepreneurs' opinions in the Czech Republic (Zlin Region) and Slovakia (Zilina and Trencin Regions) was conducted. These neighbouring regions have similar economic parameters. According to our findings, the most important motive for starting a business in the Czech Republic was to have a job. In Slovakia, the most important motive for starting a business was money. The results of our research confirmed that the societies in both countries perceived the position of entrepreneurs relatively negatively. In both countries, entrepreneurs negatively noted the approach of the state to their needs and relatively high levels of corruption. Nowadays, the most important business risk was the market risk followed by financial and personal risks. Due to a deterioration of the business environment, the performance of small and medium-sized enterprises has declined by at least 15% in both countries. In the Czech Republic, approximately 43% of entrepreneurs stated that banks accept their needs and behave appropriately to them. The positive perception of banks was significantly lower in Slovakia: 23% of entrepreneurs in the Zilina Region and 35% in the Trencin Region. Many Czech and Slovak entrepreneurs indicated that they are able to manage financial risks in their companies. Despite the significant deterioration in the business environment, SMEs demonstrate business optimism, with about 90% of the entrepreneurs in both countries believing that their company will survive the next five years.

Key Words: *Small and medium-sized enterprises, business environment, motives for business, business risks, SMEs in society, business optimism.*

JEL Classification: *L26, O16, G32, G21.*

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APPLICATION OF THE COMPETENCY-BASED APPROACH IN ORGANISATIONS IN THE CZECH REPUBLIC

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Introduction

A competency-based approach is one of the important tools of human resource management aimed at achieving strategic organisational goals [3], [25], [13], [6], [24], [27], [12]. In compliance with a resource-based approach to achieve a competitive advantage, it is necessary for organisations to identify, evaluate and develop key employee's competencies in order to achieve a competitive advantage [6], [20], [22]. The application of competencies in the management process enables organisation's requirements and employee's opportunities to interlink in a way to permit their development in mutual harmony and ensure organisation's competitiveness in a market. The emphasis on knowledge, service, and information in the new economy creates space for more new organisations to emerge, and exerts pressures on existing organisations to hire employees with higher level skills in order to compete successfully [4].

According to Mitchelmore and Rowley [18], competency is a concept that has many faces and applications. Research and practice related to competencies are typically driven by aspirations to achieve a superior performance (on an individual or organisational level). The competency-based approach to human resource management is not a new approach [22]. According to its development, it is possible to divide competencies into three main development phases.

The first phase consists of individual competencies, i.e. individual characteristics necessary to reach the required level of an employee's performance. The beginnings of this phase date back to 1959 when White [28] used, for the first time, the term "competence". Later psychologists and management theoreticians started to address the issue whether (and to what extent) competencies may determine a suitable candidate for a job position. There are two conceptions of competencies which are based on differences between terms "competence" and "competency". In this article we use the term "competency" defined by Boyatzis [3].

Managerial competencies are a specific type of individual competencies; e.g. specific knowledge, abilities, skills, traits, motives, attitudes and values necessary to improve management performance. These performance-based competencies are assessed through observed behaviours [7]. Additionally, the literature also identifies other components of managerial competencies which also contribute significantly to career success [3], [25], [26], [30], [13], [29], [2], [24], [12].

The second phase is based on the possibility of managing competencies in an organisation by means of competency models. Competency models originated in the USA and exploit a number of methods that are commonly used in traditional analyses of work positions. They were developed as a response to dissatisfaction with candidate testing that was to determine a suitable employee for the given position [17]. According to Mansfield [14], in recent years, organisations have begun to use competency models in new ways. These new competency models, of necessity, describe emerging and anticipated skill requirements, rather than skills that have been effective in the past. Because organisations are changing more rapidly, the "shelf life" of the competency model has diminished. Frequent reorganisations change job roles and make existing job descriptions and competency models obsolete.

Competencies and competency models are today commonly practiced in most of organisations [27]. There are a number of approaches to a competency-based model development [22]. It is therefore necessary for

management to select, based on an analysis, such the approach to competency-based model development which respects specific environmental conditions and meets the requirements of the given organisation. This is confirmed by Marrelli, Tondora and Hoge [15] who also point out that the application of the competency-based approach must be carefully planned and supported by a leadership of an organisation, and concerted efforts must be made to communicate with those involved or potentially affected. The development and application of managerial competency models in the proven approach for investing in human resources in order to achieve a more effective and productive workforce.

In the 1990s, core competencies of an organisation that form the third phase were identified. The concept of core competencies underlines competency-based competition and competency-based management [21]. Core competencies are a sum of organisation key organisational competencies that may be exploited to gain a competitive advantage. According to Cardy and Selvarajan [6], from a strategic management perspective, Hitt, Ireland, and Hoskisson [11] define competencies as a combination of resources and capabilities. The combination of resources and capabilities in an organisation can be classified as core competencies when they are valuable, rare, difficult to imitate, and difficult to substitute. As such, core competencies can be a source of strategic competitiveness.

The aim of the article is to evaluate, based on an analysis, the competency-based approach in organisations in the Czech Republic and also to identify areas and activities in which the competency-based approach is applied (concentrating on individual categories of employees) and test dependencies between selected qualitative characteristics that relate to the issues examined.

The article is organized as follows. The first part of the article concentrates on a theoretical background of the topic. The second part of the article is dedicated to an evaluation of outcomes of a survey conducted. The article has been produced on a basis of an analysis of primary and secondary sources, in particular research studies focusing on the competency-based approach. Primary data is derived from a questionnaire survey conducted that was focused on an application of the competency-based approach in organisations in the Czech Republic.

1. Material and Methods

In the period from 10/2011 to 06/2012 a quantitative survey was conducted, by means of a questionnaire survey, focusing on an evaluation of the level of human resource management in organisations in the Czech Republic. Subsequent to the outcomes of the previous survey (a quantitative content analysis, semi-structured interviews), one part of the survey was targeted at the use of competencies in human resource management. 109 organisations from both the private and public sectors took part in the questionnaire survey. 48.6% of the organisations surveyed have less than 50 employees, 29.4% of these organisations have 50 to 249 employees and 22% of these organisations employ more than 250 people. To enhance the quality of the questionnaire survey and to determine the real level of human resource management in organisations, it was required for the questionnaire to be completed by a specialist from the personnel department or an owner of the given organisation. Out of the respondents, 26.6% occupy the position of a senior manager in the personnel department of the given organisation, 85% have worked as personnel specialists for 3 or more years and 52.3% are university graduates. 43.1% of the responding organisations have a personnel department. The data have been processed by means of absolute and relative frequencies using the Microsoft Excel 2007 program and the IBM SPSS Statistics 20.

The following nine hypotheses were tested:

1. H_0: The utilisation of the competency-based approach in an organisation does not depend on the size of the organisation.
2. H_0: The utilisation of the competency-based approach in an organisation does not depend on the affiliation of the organisation with a larger group of organisations.
3. H_0: The utilisation of the competency-based approach in an organisation does not depend on the sector in which the organisation operates.
4. H_0: The utilisation of the competency-based approach in an organisation does not depend on the existence of a personnel department.
5. H_0: The utilisation of the competency-based approach in an organisation does

not depend on the existence of a personnel strategy.

6. H_0: The utilisation of the competency-based approach in an organisation does not depend on the execution of work position analysis.
7. H_0: The utilisation of the competency-based approach in an organisation does not depend on the position of the person responsible for human resource management in top management.
8. H_0: The utilisation of the competency-based approach in an organisation does not depend on the application of knowledge management.
9. H_0: The utilisation of the competency-based approach in an organisation does not depend on the utilisation of knowledge bases.

Testing was done by Pearson's Chi-Square Test (X^2 test) in association tables and contingency tables. To interpret the strength of relationship coefficients (the Phi coefficient, Cramer's coefficient and the Contingency coefficient), a scale according to de Vaus [8] was used.

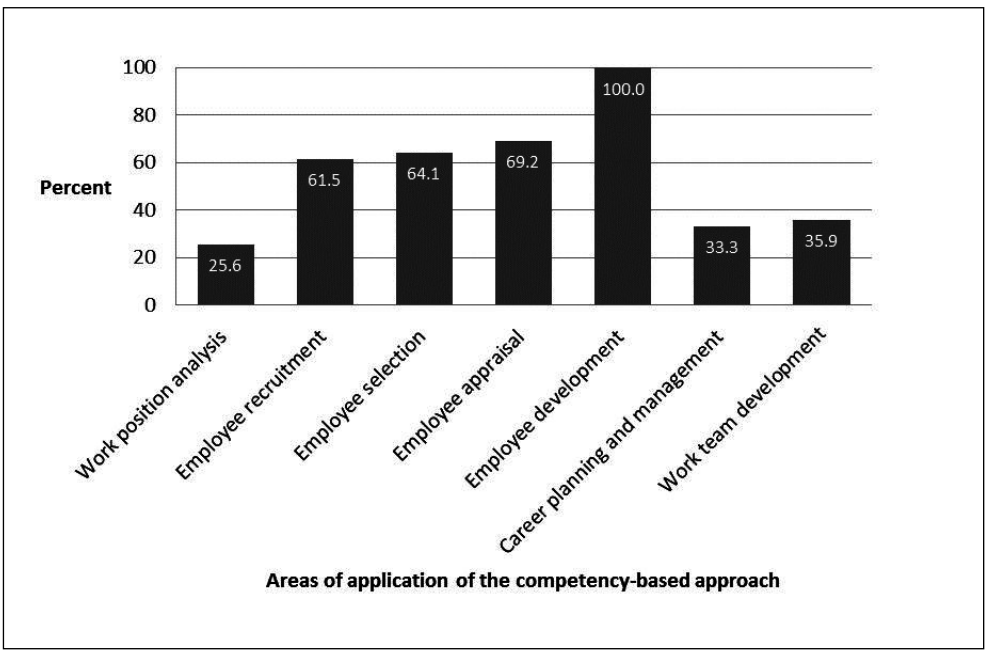
2. Results

2.1 Application of the Competency-Based Approach in Organisations

The survey conducted has shown that only 35.8% of the organisations surveyed employ the competency-based approach. In absolute figures, this means 39 organisations of the selected sample. These organisations use the competency-based approach for employee development (100%), employee appraisal (69.2%), employee selection (64.1%), employee recruitment (61.5%), work team development (35.9%), career planning and management (33.3%) and for work position analysis (25.6%). The areas in which the competency-based approach is taken advantage of are shown in Figure 1.

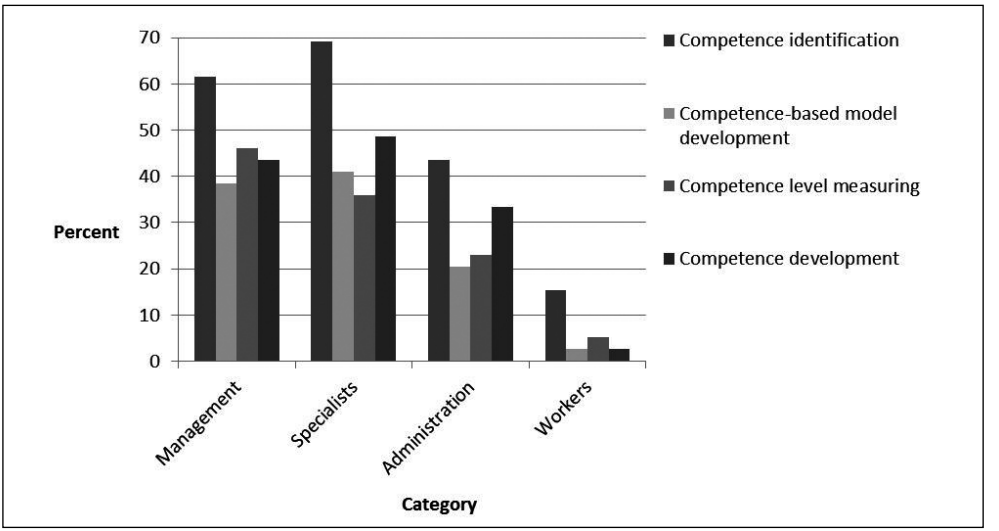
Organisations using the competency-based approach (35.8%) concentrate in particular on the following activities: a) competency identification b) competency-based model development c) competency level measuring and d) competency development. The proportional use of these

Fig. 1: Areas of application of the competency-based approach in organisations



Source: own

Fig. 2: **The proportional use of activities with respect to individual categories of employees**



Source: own

activities with respect to individual categories of employees is demonstrated in Figure 2.

It is clear from Figure 2 that individual activities are not used by organisations in a balanced way. This is also valid for individual categories of employees. In the Management category, 74% of organisations carry out the identification of managerial competencies, 38.5% of organisations develop managerial competency models, 42.6% of organisations measure the level of managerial competencies and 43.6% of organisations engage in managerial competency development. In the Specialists category, 69.2% of organisations carry out competency identification, 41% of organisations develop competency-based models, 35.9% of organisations measure competency levels and 48.7% of organisations engage in competency development. In the Administration category (Technical and Administrative Staff), 43.6% of organisations carry out competency identification, 20.5% of organisations develop competency-based models, 23.1% of organisations measure competency levels and 33.3% of organisations engage in managerial competencies development. In the Workers category, 15.4% of organisations carry out competency identification, and other activities occur rarely in this category. Only 2.6% of organisations develop competency-based models, 5.1% of organisations measure competency levels and 2.6% of organisations engage in competency development. It follows from the above said that most of responding organisations that employ the competency-based approach focus primarily on competency identification while other activities lag behind.

Based on the findings from the questionnaire, it is possible to say that organisations concentrate on the application of the competency-based approach in individual areas and activities targeted primarily at managers and specialists, rather than on the application of a competency-based model as a whole, which would trigger the synergic effect that this approach facilitates.

2.2 Comparison of the Use of the Competency-Based Approach in Small, Mid-Sized and Large Organisations

The survey has revealed that 41% of organisations which use the competency-based approach have less than 50 employees, 25.6% of organisations have 50–249 employees and 33.3% have over 250 employees, i.e. competencies are primarily taken advantage of in small and large organisations. Using extracted data, dependency was tested

by applying Pearson's Chi-Square Test. The IBM SPSS Statistics 20 program uses the so-called p-value as an output in dependency testing. P-value in hypothesis testing equals the minimum significance level at which the null hypothesis can be rejected. The calculated p-value should be lower than the set significance level of 0.05; it is possible to say that the null hypothesis, i.e. the hypothesis on the independence of qualitative characteristics, is rejected at the 5% level of significance. As the p-value calculated by means of the X^2 test of 0.103 is higher than the selected level of significance $\alpha = 0.05$, null hypothesis cannot be rejected; see Table 1. The result of the test has confirmed that the application of the competency-based approach by organisations was not determined by the size of the organisation (the null hypothesis (H_0) no. 1).

From the point of view of the affiliation of organisations surveyed, 59% of organisations applying the competency-based approach belong to a larger group of organisations. This arrangement enables the parent organisation to develop competency-based models that individual organisations further apply at local, regional and national levels. In this case it is, however, necessary to respect the local specifics of the organisation in which the model is to be implemented. In the sample examined, cultural differences do not play any significant role as only 21.1% of organisations applying the competency-based approach run their business on an international scale, i.e. their competency-based models should respect, among other things, the cultural differences of individual countries. The second hypothesis was tested with respect to these results. Based on the X^2 test, the null hypothesis has been rejected at the 5% level of significance (p-value = 0.003) and an alternative hypothesis has been accepted. The result has also been confirmed by Fisher's test for 2x2 contingency tables (p-value = 0.003). The use of the competency-based approach in an organisation is dependent on its affiliation with a larger group of organisations (the alternative hypothesis (H_a) no. 2). The strength of the relationship between the variables is, according to the value of Phi coefficient (0.283), Cramer's coefficient (0.283) and Contingency coefficient (0.283), direct (with respect to the positive value) and moderate; see Table 1.

The third hypothesis tested whether the application of the competency-based approach in an organisation is dependent on the sector in which the organisation operates. The competency-based approach is applied by 39.7% of organisations from the tertiary sector, 34.4% of organisations from the secondary sector and 11.1% of organisations from the primary sector. Based on the X^2 test, the null hypothesis cannot be rejected (p-value = 0.283). As the survey has showed, the use of the competency-based approach does not depend on the sector in which organisations operate; see Table 1.

Tab. 1: The results of the qualitative characteristics test for hypotheses no. 1, 2 and 3

Number of hypothesis	Null hypothesis (H_0)	P-value	Rejection of H_0	Value of Phi coefficient	Strength of the relationship
1	The utilisation of the competency-based approach in an organisation does not depend on the size of the organisation.	0.103	No	–	–
2	The utilisation of the competency-based approach in an organisation does not depend on the affiliation of the organisation with a larger group of organisations.	0.003	Yes	0.283	Moderate
3	The utilisation of the competency-based approach in an organisation does not depend on the sector in which the organisation operates.	0.283	No	–	–

Source: own

2.3 System of Personnel Management in Organisations Employing the Competency-Based Approach

The system of personnel management in organisations belongs among important factors that determine the application of the competency-based approach in organisations. A personnel department as a specialised workplace creates, organises and supports the system of personnel management in an organisation. More and more dynamic changes in the outer and inner organisational environment create increased requirements for the quality of personnel management and thus the performance of personnel departments. Despite the fact that the need for the establishment of a personnel department is determined by a number of factors (the current situation in the organisation, the size of the organisation, its organisational structure, its purpose of business, the organisation's strategy, the personnel strategy, etc.), the survey has confirmed that the use of the competency-based approach by organisations is dependent on the existence of a personnel department (H_a no. 4).

The survey has revealed that 68.6% of organisations that do not employ the competency-based approach do not have a personnel department, while 64.1% of those that employ the competency-based approach do. Simultaneously it has been validated that the need for the establishment of a personnel department grows with the size of the organisation (according to the number of employees). Only 17% of organisations surveyed with less than 50 employees have a personnel department. In the category of 50 to 249 employees, 50% of organisations have a personnel department and in among organisations with more than 250 employees 91.7% of organisations have a personnel department. Based on the X^2 test, the null hypothesis has been rejected at the 5% level of significance (p-value = 0.001). The result is also confirmed by Fisher's test (p-value = 0.001). The strength of the relationship between the variables is, according to the value of Phi coefficient (0.316), Cramer's coefficient (0.316) and Contingency coefficient (0.302), direct and moderate; see Table 2.

A personnel strategy is one of an organisation's partial strategies linked to the overall strategy of the organisation. It reflects the organisation's long-term goals regarding human resources and plans aimed at achieving these goals and therefore it should be elaborated in writing. Among the organisations surveyed that use the competency-based model, there are 65.8% of organisations with a personnel strategy formulated in written form, 26.3% of organisations have a personnel strategy, but not a written version, and only 7.9% of organisations have no personnel strategy at all. The survey has revealed that the use of the competency-based approach in organisations is dependent on the existence of a personnel strategy (H_a no. 5). Based on the X^2 test, the null hypothesis has been rejected at the 5% level of significance (p-value = 0.006). The strength of the relationship between the variables is, according to the value of Phi coefficient (0.310), Cramer's coefficient (0.310) and Contingency coefficient (0.296), direct and moderate; see Table 2.

The position of personnel departments within organisations is changing. Organisations' owners have started to realise the importance of human resources for competitive advantage achieving. Apart from making personnel management an integral part of the organisational structure, it is essential to determine in detail requirements for work positions and job descriptions of not only employees of the personnel department, but also of the rest of the organisation. Job analysis is a very important activity in the system of personnel management. It is a point of departure for the execution of a number of other personnel activities. It provides information on the position and thus creates a picture of an employee who would be suitable for the job. Since competencies always relate to a certain job, they cannot be identified without prior job analysis.

Job analysis is carried out by 55% of organisations surveyed and 84.6% of organisations employing the competency-based approach. With respect to the survey conducted, it is possible to state that the use of the competency-based approach by organisations depends on the execution of work position analysis (H_a no. 6). Based on the X^2 test, the null hypothesis has been rejected at the 5% level of significance (p-value = 0.000). The result is also confirmed by Fisher's (p-value = 0.001). The strength of the relationship between

the variables is, according to the value of Phi coefficient (0.444), Cramer's coefficient (0.444) and Contingency coefficient (0.406), direct and substantial; see Table 2.

The application of the competency-based approach is also determined by the fact whether or not the person responsible for human resource management holds a position in the organisation's top management. If the head of the personnel department belongs to the organisation's strategic management team, s/he is more likely to push through the interests in the area of human resource management than in the opposite case. In 66.7% of organisations applying the competency-based approach the person responsible for human resource management holds a position in the organisation's top management. With respect to the survey conducted it is possible to state that the application of the competency-based approach by organisations depends on whether or not the person responsible for human resource management holds a position in the organisation's top management (H_a no. 7). Based on the X^2 test, the null hypothesis has been rejected at the 5% level of significance (p-value = 0.036). The result is also confirmed by Fisher's test (p-value = 0.046). The strength of the relationship between the variables is, according to the value of Phi coefficient (0.201), Cramer's coefficient (0.201) and Contingency coefficient (0.197), direct and low; see Table 2.

Tab. 2: The results of the qualitative characteristics test for hypotheses no. 4, 5, 6 and 7

Number of hypothesis	Null hypothesis (H_0)	P-value	Rejection of H_0	Value of Phi coefficient	Strength of the relationship
4	The utilisation of the competency-based approach in an organisation does not depend on the existence of a personnel department.	0.001	Yes	0.316	Moderate
5	The utilisation of the competency-based approach in an organisation does not depend on the existence of a personnel strategy.	0.006	Yes	0.310	Moderate
6	The utilisation of the competency-based approach in an organisation does not depend on the execution of work position analysis.	0.000	Yes	0.444	Substantial
7	The utilisation of the competency-based approach in an organisation does not depend on the position of the person responsible for human resource management in top management.	0.036	Yes	0.201	Low

Source: own

2.4 Use of the Competency-Based Approach in Knowledge-Based Organisations

Knowledge-based organisations are organisations applying a knowledge-based approach to the organisation. This approach perceives organisations as a means for the development, integration, preservation, sharing and application of knowledge. According to Calabrese [5], the twenty-first century has surfaced the need for more flexible and responsive knowledge-based organisations capable of rapidly adjusting to the increasing rate of change and demands in both products and services. Wu, Ong and Hsu [31] state that knowledge-based organisations allocate resources to intangible assets in the rapidly changing and highly competitive business environment in order to gain competitive advantages. Given the presence and complexities of internal and external influences, the manager is often faced with the prospect of reacting to constant changes in the internal and external environment. In order to be effective in that regard the manager must possess these personal characteristics necessary to improve management performance [10].

The survey conducted has revealed that 92.3% of organisations applying the competency-based approach record knowledge of their employees. Despite the fact that 82.1%

of organisations use knowledge bases (created within the organisation); only 20.5% of them motivate their employees to share, transfer and preserve knowledge in the organisation. Based on the above-stated results, two last hypotheses were tested; see Table 3. Both these hypotheses have been rejected and alternative hypotheses have been accepted. Based on the X^2 test, the null hypothesis (H_0 no. 8) has been rejected at the 5% level of significance (p-value = 0.015). The strength of the relationship between the variables is, according to the value of Phi coefficient (0.278), Cramer's coefficient (0.278) and Contingency coefficient (0.268), direct and moderate. Based on the X^2 test, the null hypothesis (H_0 no. 9) has been rejected at the 5% level of significance (p-value = 0.000). The strength of the relationship between the variables is, according to the value of Phi coefficient (0.415), Cramer's coefficient (0.415) and Contingency coefficient (0.383), direct and substantial. It is possible to say that organisations that utilise the knowledge of their employees realise the importance of knowledge management and perceive their employees as an important asset for achieving a competitive advantage. With respect to the fact that knowledge forms part of competencies, this subsequently facilitates the implementation of the competency-based approach by organisations.

Tab. 3: The results of the qualitative characteristics test for hypotheses no. 8 and 9

Number of hypothesis	Null hypothesis (H_0)	P-value	Rejection of H_0	Value of Phi coefficient	Strength of the relationship
8	The utilisation of the competency-based approach in an organisation does not depend on the application of knowledge management.	0.015	Yes	0.278	Moderate
9	The utilisation of the competency-based approach in an organisation does not depend on the utilisation of knowledge bases.	0.000	Yes	0.415	Substantial

Source: own

3. Discussion

The survey has found that organisations in the Czech Republic concentrate on the application of the competency-based approach in areas and activities targeted primarily at managers and specialists, rather than on the application of a competency-based model as a whole. The outcomes provided above also confirm that the application of the competency-based approach in organisations in the Czech Republic depends on the following:

1. the fact whether an organisation is part of a larger group of organisations;
2. personnel management arrangements in an organisation (the existence of a personnel department, the personnel strategy processed in written form, work position analysis execution, the position of the person responsible for human resource management in top management);
3. the application of knowledge management.

According to the strength of the relationship between the variables, the most important group of factors is that relating to personnel management organisation. No dependency on the size of organisations and sector in which organisations operate has been proven.

The above-said means that if organisations employ the competency-based approach, they do not use individual activities (competency identification, competency-based model development, competency level measuring, competency development) within their frame on an equal basis. This is also valid for individual categories of employees (organisations concentrate in particular on managers and specialists). The majority of surveyed organisations using the competency-based approach place major focus on competency identification; other related activities lag behind. This means there is no synergic effect which would occur in the event of the implementation of the competency-based approach as a whole. According to Abraham et al. [1], organisations that aspire to be high-performance organisations should be encouraged not only to competencies identification. These results are

confirmed also by Martin and Pope [16], who also point out that studies revealed that in most organisations inflexible competency models are utilized and many of them are not sufficiently transparent and dynamic to be used effectively in today's varying organisations.

In compliance with the resource-based approach to competitive advantage development, it is the employees who become, due to their competencies, an important source for achieving a competitive advantage. The importance of competencies to organisations cannot be overstated; in fact, they can be the key to competitive advantage [6]. Competency management plays an important role in individual and organisational levels in the following areas: (1) strategic workforce planning, (2) recruitment, (3) selection, (4) performance appraisal, (5) training, (6) education and development, (7) talent management, (8) career management, (9) performance management, (10) succession planning, and (11) rewarding and recognition [25], [13], [1], [15], [9], [24], [19], [27], [22]. Vazirani [27] adds that competencies and competency models are a viable tool that can be utilized to prepare the current and future workforce and retain skilled incumbent employees. Furthermore, competencies and competency models are an assistive device for individuals to focus on their current competencies and refocus or enhance their competencies as necessary. With the knowledge and use of the information contained within a competency model and awareness of their individual competency strengths and weaknesses, individuals may manage their future job or career success, navigate their current chosen career pathway, or apply the information to examine new career opportunities [27].

Conclusion

Based on the evaluation of the survey targeted at the use of the competency-based approach in organisations in the Czech Republic, it is possible to state that despite the fact that the application of the competency-based approach has a demonstrable impact on the fulfilment of organisations' strategic goals; it is applied by only 35.8% of responding organisations. They include in particular small and large organisations. Important factors that determine the use of the competency-based approach in these organisations include: the affiliation with a larger group of organisations, the high level of personnel management organisation and the application of knowledge management which facilitates the application of the competency-based approach by organisations. With respect to the above said organisations are recommended to focus on the application of the competency-based approach as a whole, which will trigger the required synergic effect and contribute to the efficient utilisation of competencies in management. In the fully integrated human resource management system employing the competency-based approach, competencies represent a key prerequisite for efficient performance. This will subsequently bring benefits at both the organisational and individual levels.

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Abstract

APPLICATION OF THE COMPETENCY-BASED APPROACH IN ORGANISATIONS IN THE CZECH REPUBLIC

Martina Fejfarová, Hana Urbancová

A competency-based approach is one of the important tools of human resource management aimed at achieving strategic organisational goals and a competitive advantage. The article focuses on application of the competency-based approach in organisation in the Czech Republic. The first part of the article concentrates on the theoretical background. The second part evaluates the results of the quantitative survey. The aim of the article is to evaluate the competency-based approach in organisations in the Czech Republic and also to identify areas and activities in which the competency-based approach is applied and test dependencies between selected qualitative characteristics that relate to the issues examined. The results of the survey show that if organisations employ the competency-based approach (35.8%), they do not use individual activities within their frame on an equal basis. This is also valid for individual categories of employees (organisations concentrate in particular on managers and specialists). The results further confirm that the application of the competency-based approach in organisations in the Czech Republic depends on the fact whether an organisation is part of a larger group of organisations (p-value = 0.003, Phi coefficient = 0.238); personnel management arrangements in an organisation (the existence of a personnel department (p-value = 0.001, Phi coefficient = 0.316), processed personnel strategy (p-value = 0.006, Phi coefficient = 0.310), work position analysis execution (p-value = 0.000, Phi coefficient = 0.444), the position of the person responsible for human resource management in top management (p-value = 0.036, Phi coefficient = 0.201)) and the application of knowledge management (p-value = 0.015, Phi coefficient = 0.278). According to the strength of the relationship between the variables, the most important group of factors is that relating to personnel management organisation. No dependency on the size of organisations and sector in which organisations operate has been proven.

Key Words: *Competency-based approach, competencies, competency models, human resource management, competitive advantage, survey.*

JEL Classification: *M12.*

DOI: *10.15240/tul/001/2015-1-009*

RECENT TRENDS IN THE STUDY OF MERGERS AND ACQUISITIONS

Sorin Adrian Achim

Introduction

In the present globalized world, investments play a key role. But the international financial crisis has affected both the course of these flows and their intensity. Investors have reconsidered their positions and strategies on the market. There are more options for investors to place their money and to develop. Out of these options, an important part of the investment flows happens through mergers and acquisitions. This is not necessarily linked to the number of such processes taking place, but it is more related to the sums of money that are transacted in merger and acquisition operations.

As Ferreira et al [10] point out, this type of operations has become an important instrument for activity internationalization. This aspect was emphasized in the field's literature from the beginning of this millennium. Consequently, different cultural, economic, social and legal environments meet. This is a very important feature of the mergers and acquisitions that, incorrectly treated, could lead to the failure of such an operation.

But mergers and acquisitions also take place at a domestic level. Regardless of the geographical space in which they occur, there are several goals in merging with or acquiring another company. Some of the most important are related to:

- overcoming legal barriers for entering a national market,
- access to resources,
- cheaper work force,
- enforcing the position on the market,
- lowering competition, etc.

Mergers and acquisitions are complex processes that, as shown earlier, need to be very well understood and planned in order to be successful. From here comes the need for continuous knowledge about the field's literature. However, the field's literature is wide and a lot of time would be needed for consulting all the information on the market. As shown in the Statistics part, when checking the Web of Knowledge platform, more than 200 articles were found with the specific subject of mergers and acquisitions only in 2014. To ease the work of researchers and practitioners in the field, the goal of this article is to present the latest trends in the study of mergers and acquisitions through a brief literature review of the papers published in 2014. This comes to complete the work of others who reviewed the mergers and acquisitions literature for different periods of time. In this respect it is noteworthy to mention the work of [10] who point out the evolution of the subjects treated by authors in the field's literature. Additionally, they present the most cited papers in order to show newcomers in this field of mergers and acquisitions research where to start from.

Our study is an update of such papers, allowing for an easier approach of the latest trends in mergers and acquisitions and their study.

The following part presents the methodology used.

We then present some statistics related to the articles published on the subject of mergers and acquisitions in 2014, based on what we found on the Web of Knowledge application. We point out that most of these studies are related to developed economies such as the USA, the UK, Germany or China. On the 2010–2014 ranking the first two developing countries that appear in the ranking are South Korea on the 12th place and Romania on the 18th. For the 2014 ranking South Korea is on the 13th place and Chile on the 20th. Consequently, we emphasize the need for more studies on mergers and acquisitions related to developing economies. In both cases, most of the researches in this field were published in Journal of Corporate

Finance. Other features are assessed and presented in this part.

Some of the most important ideas found in the field's literature are then reviewed, summarized and briefly described in order to help researchers in the process of literature review. The emphasis is put on the banking sector as from this started the 2008 financial crisis and it is the most common in the latest field's literature.

Conclusions are drawn from our analysis and the most important directions in the study of mergers and acquisitions are emphasized.

1. Methodology

To achieve our goal we have accessed the Web of Knowledge database and considered all published works that satisfied the searching key "merger* and acquisition*". These works were related to the economic field. However, as we speak about latest trends in the domain, we have filtered the results based on the year of publication, taking into consideration papers published in 2014.

The final sample is made up of 206 scientific researches that dealt with the issue of mergers and acquisitions in 2014 and were already available in the Web of Knowledge database at the time of our research. The final date for consulting the database was November, 20th, 2014.

First of all, we have descriptively analyzed the papers using the database's analyzing results option. Then we have proceeded in reading the papers and grouping them according to their main subject, in order to be able to construct a good quality review related to the latest trends in the field.

Additionally, we have also run a result analysis for the articles that satisfied our searching key, but for the 2010–2014 period. The reason is that 2010 is the year when the analysis in the study of [10] stops and we wanted to see what happened afterwards. In this part of the analysis were evaluated 1595 records.

Several hypotheses were constructed at the beginning of our analysis:

H_1: Most of the studies in this field are related to the developed countries.
This hypothesis comes from the fact that the major part of the research in any field is related to developed countries, as they have the necessary tools for research and development. Additionally, companies with the head quarter in developed countries are the ones that acquire.

H_2: The major part of the studies that deal with mergers and acquisitions are published in Management journals, or belong to the Management category.
This assumption comes from the fact that the managerial group of a company is the one to plan a merger or an acquisition and to conduct such a process, both a priori and post operation, including all the negotiation discussions. Managers are appointed by shareholders to represent their interest – profit.

However, papers of this kind can also belong to the category of corporation studies, as these are the ones that appeal to such operations.

H_3: An important part of the sample deals with cross-border investigations.
We base this hypothesis on the fact that cross-border mergers and acquisitions are much more important than the domestic ones, as their impact internationally is more intense.

We also expect a lot of studies published lately to deal with:

- new ways of assessing the merger and acquisition process,
- the Euro Area crisis and its impact upon the merger and acquisition market,
- assessment of this issue in the banking sector, as this was the most affected by the bankruptcy of the Lehman Brothers Bank in the USA, and so on.

The reason for choosing the Web of Knowledge database is that it is the most important one internationally. The best journals and the best publishing houses have their papers gathered in this database. We have built our study on the presumption that, who is not in the Web of Knowledge, does not exist.

2. Describing the Features of the Analyzed Sample

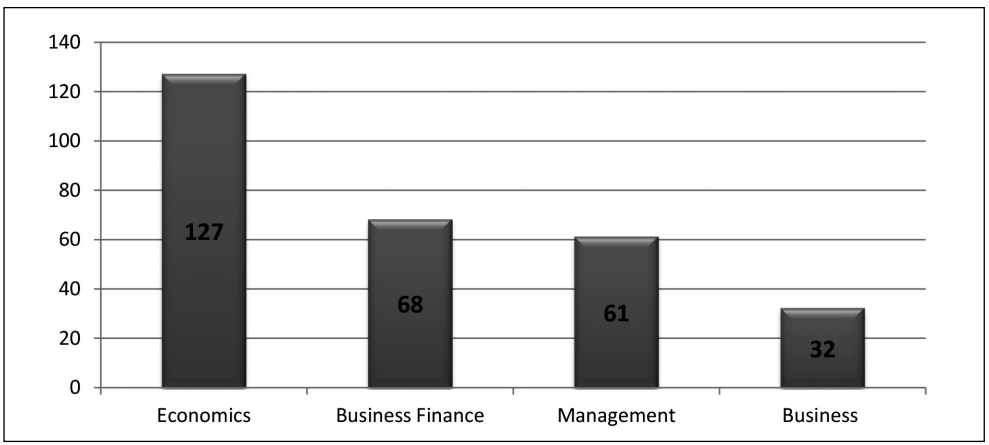
In 2014, up to the moment of our analysis, 206 studies satisfied the searching key "merger* and acquisition*". In order to understand the trends, we have chosen first to evaluate these studies using the "Analyze results" option of the Web of Knowledge database.

Based on these results, the first assumption is correct – almost all the studies in this group are related to the developed countries. The

absolute supremacy belongs to the USA, to which are related 90 of the 206 studies, representing almost 44% of the sample. At an extremely high difference comes the United Kingdom, placed the second in the ranking, with a share of 13.1% (27 studies). Germany is on the third place, with 21 papers (10.2% of the sample). The rest of the countries have relative frequencies lower than 8%. Among them are: the Netherlands, Canada, France, China, Italy, Japan, and so on. This is an important aspect emphasized by this research – studies assessing the issue of mergers and acquisitions in the developing countries are scarce. This is a negative point in the study of such processes as, usually, one of the parts is located in such an economy. Thusly, more efforts should be directed towards evaluating features of mergers and acquisitions in the developing countries. An important matter is that these countries may be characterized by legal, social or economic instability, which change the typical development of such a process.

More than half of the sample (127 studies, representing 61.7%) were studies published in the field of Economics. Thusly, from the point of view of the category, hypothesis 2 is rejected. Studies published in the Management category come only on the third place as a share, after the ones in Business Finance, as presented in Fig 1. If the category of Operations Research Management Science is added to Management, it comes on the second place, with a share of around 38% in the volume of the sample.

Fig. 1: Bar chart of the most important categories to which the studies belong



Source: own construction based on Thomson Reuters Web of Knowledge data

Hypothesis 2 is accepted when assessing the type of journal. Most of the researches in this field where published in 2014 in management journals or in the ones related to corporations or competitiveness. Differences in this respect are not that significant as in the case of the other characteristics analyzed. Most of the studies, 9, appeared in the Journal of Corporate Finance. Then comes Journal of Competition Law and Economics (8 papers). On the third place are five journals, each of them with 6 articles on this subject. These are:

- Strategic Management Journal,
- Review of Industrial Organization,
- Journal of Financial Economics,
- Journal of Finance,
- Journal of Banking and Finance.

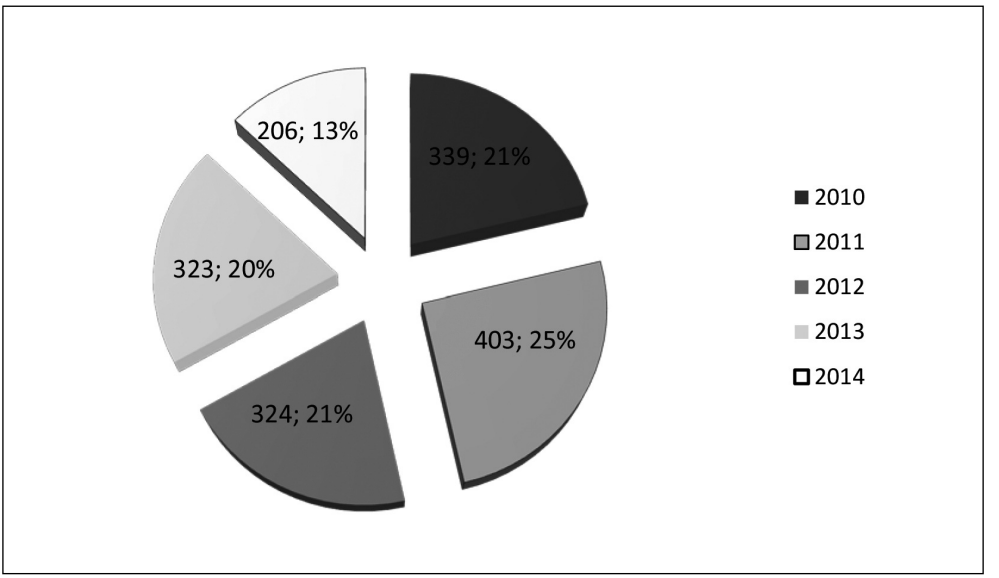
They are followed by other management journals.

Hassan I. is the author with the most papers on mergers and acquisitions published in 2014.

As the study of [10] stopped in 2010, we also present a brief statistical description for the period 2010–2014. Out of the 1595 papers

satisfying our searching criteria, 25% were published in 2011. Fig. 2 shows that there are not important differences, except for 2014. This could come from the fact that, at the moment of the analysis, not all journals had their last issue published.

Fig. 2: Structure of the studies published on mergers and acquisitions based on the year of publication



Source: own construction based on Thomson Reuters Web of Knowledge data

However, except for 2011, one can see an approximately constant number of articles published on this matter from 2010 towards present.

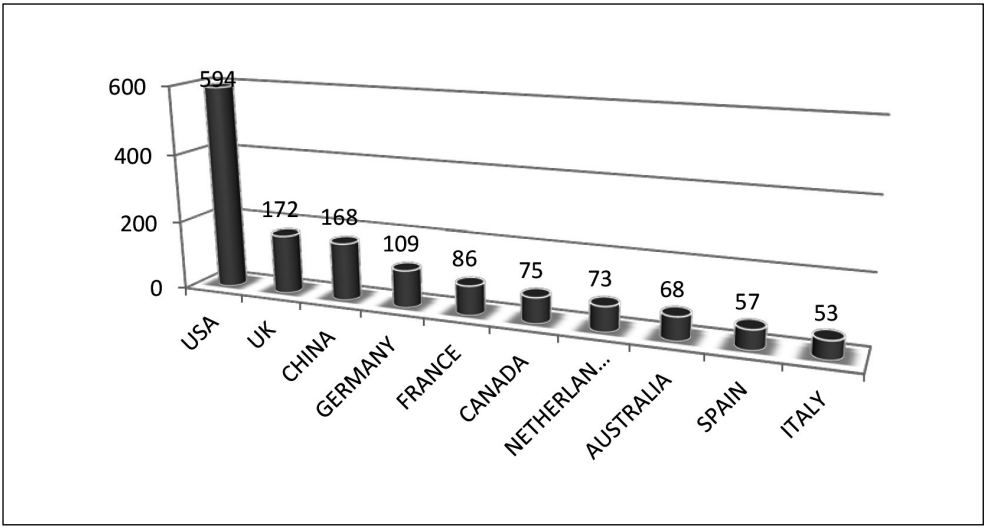
In what regards the country to which the paper is related, nothing changes for the first two ranks. The USA is on the first place for the entire period, too. Almost 40% of the sample is related to this country. The United Kingdom comes the second, again, with a very low share in respect to the USA (almost 11%). Germany comes on the fourth place, being replaced by China on the third. We present the first 10 countries in Fig. 3. It can be seen that the first working hypothesis is also accepted for the 2010–2014 period. It is noteworthy to emphasize that there are 26 papers evaluating this issue in relation to Romania (it ranks 18th). Only South Korea is to be found in more studies (42). All other developing economies are far lower in the ranking. For example Greece, which was extremely intensely affected by the global economic crises is to be found only on the 25th place, with 19 studies in this field.

Most of the studies were published by Weber Y. and Tarba S.Y. (each one with 10 papers in this field in the analyzed period).

Journal of Corporate Finance is in the top of the ranking, again, with 49 articles. This time, between it and the Journal of Competition Law and Economics (46 papers) is placed the Review of Industrial Organization (48).

In what regards the category, Management and Business Finance switch places, with 595 and 480 studies, respectively. The first remains the Economics category.

Fig. 3: The top 10 countries to which studies are related for the 2010–2014 period



Source: own construction based on Thomson Reuters Web of Knowledge data

3. The 2014 Trends in the Study of Mergers and Acquisitions

Subsequent to reviewing the whole sample, we grouped the studies based on their main subject. In the following we briefly present some of the most important of our findings.

After evaluating the 2014 papers, we can conclude that the third working hypothesis is accepted. Most of the studies assess this issue from the point of view of cross-border transactions. A possible explanation is the fact that international transactions are of a much more interest than the domestic ones. Inside country mergers and acquisitions are of more interest only for the national actors on that market. Consequently, in order to be published and cited, authors seek to choose subjects that are of international, global relevance. When looking for the "cross-border" expression in the sample analyzed, more than 30 researches were found. This represents about 15% of the studies reviewed. However, much more of them really assess this issue from an international point of view. Few are the articles or other papers that have the subject related to domestic mergers and acquisitions. Among them we found, for example, the study of [25] that speaks about the problem of local governments' consolidation in Japan. The article points out that governments receiving larger sums of money from the center are not likely to merge. Other examples of this type are related to the US newspaper market [16], the US banking sector [8] and so on. We have also found an example from a European country – the Netherlands. [4] study the spatial clustering process that appeared due to mergers and acquisitions in the Dutch banking sector. They analyze a very long period of time, from 1850 to 1993.

The field's literature also speaks about merger waves and their characteristics. This theory is to be found in relation to different sectors. For example, [31] estimate a model for the US banking sector for a large period (1987 to 2013) in order to test the theory of merger waves and find the causes for such waves. They emphasize that these are directly related to stock market booms. Merger waves are also assessed from the point of view of connections and linkages between industries. The influence of the development of the insurance market upon the hospital merger wave in the 1990s is evaluated by [30]. Waves of consolidation are also assessed in the insurance sector alone (see, for example, [34]). Mergers and acquisitions are expected to happen in order

to restructure and consolidate the European insurance sector after the harmonized Solvency II framework that is about to be put into practice.

An important study comes to emphasize the growing significance of companies from emerging economies in the M&A process ([29]). They point out that an important feature of the present M&A wave is the influence of employees on the results of the process. These results were obtained through a laboratory experiment and, beside the growing importance of the companies' size, they also emphasize the increasing weight of the cultural issues in the mergers and acquisitions. Other studies come to point out the growing importance of cultural-based strategies. This is a trend in the study of corporate governance. A well developed cultural strategy increases the post acquisition performance and efficiency [21]. Additionally, [36] stress the need for considering cultural differences when constructing the M&A strategies. The performance of mergers and acquisitions cannot be anymore explained in a simple manner. Another aspect treated by this study is the importance of the managerial team upon the M&A efficiency. [2] also assess cultural issues. Their result is that M&A success is directly related to cultural fit. A new approach is introduced by [12] – learning by observing. They show that culturally different companies can merge or be involved in an acquisition process in a more efficient way by studying the problems encountered by their predecessors on a specific market. Problems related to spatial and cultural distance are also present in other newly published studies (see, for example, [24]).

An increasing importance is given nowadays to the evaluation of intermediaries in the mergers and acquisition processes. The most frequently of such groups treated in the latest literature are:

- Managers,
- Accountants and auditors,
- Financial advisors.

Their role is very important as what finally counts is the performance of the M&A process and the gains that this process brings to shareholders. Performance, in general, is assessed in relation to board features (see, for example [28]). The latest studies also evaluate the performance of the M&As in relation to the managers' characteristics. For example, [17] investigate the influence of CEOs experience upon the M&A performance. They conclude that firms with former investment directors in the managerial team have a higher propensity to acquire and are more efficient in this process. On the contrary, more traditionalist companies, with conservative managers are, are less likely to get involved in M&A operations [19]. This statement is true, even though CEOs in the acquirer company are more likely to have increased compensations after the acquisition [18].

Financial advisors are also very important, especially when they have experience in the target country, while the acquirer does not. Studies such as the one of [13] confirm the certification hypothesis in the choice of consultants for cross-border M&A.

Traditional companies as mentioned before also have conservative accounting approaches. Consequently, more traditional firms from the accounting point of view are much more reluctant towards mergers and acquisitions. Post merger accounting issues are also discussed in the newest literature. [6] emphasizes the difference between pre and post transaction values of assets and evaluates the diversification discount. It is interesting to see how the whole process of accounting standardization based on the IFRS has affected M&A performance. [5] state that the merger premium has decreased due to international harmonization of reporting standards.

Beside accountants, auditors also play a key role in the M&A process. This aspect is brought into light by [23] who show a significant decrease in the costs the acquirer has to bear when a Big N auditor is auditing its target company. But due to increased market power and to the Big N theory, the auditing market is also subjected to M&As. The impact of them is assessed in the field's literature. Studies on this subject reject the hypothesis of market concentration upon auditing fees [22]; [9].

3.1 The Banking Sector

The banking sector is highly assessed in mergers and acquisitions problems. Out of the 206 papers in the sample, 23 deal specifically with this sector. Consequently, more than 10% of the sample is related to the banking sector. It is no wonder that the Journal of banking and Finance is among the top in the ranking based on the number of articles published on the subject of mergers and acquisitions.

In this group of papers appear more mergers and acquisitions related theories. There are

several theories related to the size of the banks involved, to the size of the banking sector and to changes that appear on the market once with the consolidation through M&A. We restate the paper of [31] that comes with an interesting theory – "too big to merge?".

Related to it is another study that tests the idea of "too big to succeed" [27]. The authors of this study use a sample of Japanese bank mergers to test the effect of sectorial consolidation upon financial performance. It is true that the consolidation process brings along more market power, by the profit and cost efficiency are very little affected. This effect is more intense when mergers and acquisitions of banks are the result of governmental influences in post crisis economies. In opposition, [33] show that public banks perform more badly then private ones only when they are forced to purchase other banks with major problems. Otherwise, after mergers or acquisitions with normal banks that have insignificant problems or no problems at all, they have the same results as the private banks.

The issue of crises appears in other studies related to M&A in the banking sector, too. For example, the financial crisis at the beginning of the Millennium caused a concentration of the Turkish banking sector (due to liquidations and M&As) and the development towards a monopolistic market [37], [32]. On the contrary, the consolidation of the Spanish banking sector after the 2008 financial crisis had little impact upon costs for the clients [26]. [7] explain that the resemblance between the Euro Area and the Latin America crises and the difference from the Asian one is due to the fact that one of the most important aspects was attaching much more weight to bank mergers than to labor force mobility as adjustment mechanism. A novelty in this field is the study of [3] that develops and early-warning model for the prediction of problems in the European banking sector using both micro and macro-level data. The analysis is run on the data of the present financial crisis.

In contrast with the first two theories presented above comes the "too big to fail" approach. This theory is found not only in the banking sector, but also in insurance and others [11]. [11] study this effect on the US market for the 2001–2011 period and show that there is not clear evidence of it, but that the characteristics of the acquirer are, however, important. These characteristics are associated with different risks that can appear in the M&A process and after it.

Another hypothesis is to be found in the field's literature lately is the "concentration-fragility" one. In [38] it is tested along with the systemic risk and confirmed based on a sample of domestic and cross-border mergers.

The level of concentration and consolidation is also of interest from the point of view of evaluating it. That is why [14] constructed indexes to measure the level of market concentration in the banking sector. These indexes could also be transposed in other sectors, too. They also evaluate the influence of market concentration upon the corporate cash holdings.

The Data Envelopment Analysis (DEA) is respecified by [15] in the form of an inverse DEA to assess the efforts that the acquirer or a merger has to make in order to reach a certain level of efficiency of the process.

There are other studies that evaluate the pre and post M&A situation. For example, [1] show that, as pre-M&A process equilibrium is altered, effects are different for the parties involved in the process, the economic sector and households. A merger in the banking sector facilitates access to credit for companies, but reduces it for households. [35] study these aspects on the Malaysian banking market. Their results are consistent with the fact that the acquirer is more productive in respect to its targets, thing that insures its position in the negotiation process. Efficiency of bank mergers in Taiwan is also given by shareholders [20]. The dynamism of such processes is investigated and persistent and intertemporal effects evaluated.

Conclusions

The goal of our study was to present the latest trends in the study of mergers and acquisitions. Analyzing descriptively the studies published in 2014, in particular, and the ones published in the period 2010–2014 in general, we have pointed out that a significant majority of them are related to developed countries. This is extremely important, as, usually, one of the parts in a merger or acquisition process is located in a developing country. Consequently, there is an important need in the field's literature to assess this issue from the point of view of the less developed part. Almost all researches do this from the point of view of the more developed, more powerful partner in the process. Researchers have to bear in mind

the fact that different countries have different characteristics. What is suitable for one of them may not be the best for another. There are many examples in Economics that not all results for developed countries can be 100% transposed to the developing ones. For example, the relation described by the Phillips curve is not valid for many developing countries.

Changes in the approach would also be benefic for companies that want to extend to developing economies. In this way they would have a better possibility to inform about the features of a certain national market and then plan their actions according to them.

Additionally, most of the researches deal with cross-border issues related to mergers and acquisitions, including financial intermediaries that could get involved in such processes. We think that domestic evaluation of mergers and acquisitions should be encouraged, as specificities of local markets could be found out of such investigations.

Merger waves and the banking sector occupy an important part of the literature assessing mergers and acquisitions. For each of the two, we pointed out the latest approaches and studies. For example, we emphasize the appearance of new indexes that evaluate M&A efficiency or the level of consolidation of a market.

The role of intermediaries in M&A processes is also more and more assessed. And here we speak about accountants, auditors or financial advisors.

After reviewing the latest trends in the study of mergers and acquisitions based on the most recently published papers we suggest potential authors to start approaching other sectors than the banking one, too. This because each sector has its own specificities that may be extremely different, but also extremely important.

Due to the limits of such a paper, we do not consider our study exhaustive. Complements to it can be brought and are highly encouraged.

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Abstract

RECENT TRENDS IN THE STUDY OF MERGERS AND ACQUISITIONS

Sorin Adrian Achim

Mergers and acquisitions are important operations that happen nowadays. The goal of such processes is to "conquer" new markets and benefit from their resources (natural or human), or to lower competition (by acquiring a competitor or merging with it). More and more studies are written on this subject, thing that makes people interested in it have a difficult job in staying up to date. That is why the present research had as a goal to evaluate and summarize the latest trends in the study of this subject. Based on our goal we have conducted an extended analysis on the studies published in 2014 in this field. Additionally, we have also descriptively analyzed the period 2010–2014. For this, we have presumed that the most important research is to be found in the ISI-Thomson Web of Knowledge. We point out the lack on such literature on the developing countries, as most of these studies are related to the developed ones, such as the USA, the UK, China or Germany. The major part of them is published in the Journal of Corporate Finance. The second part of the article comes to emphasize the most important ideas that are to be found in the 2014 field's literature. Many of the studies are related to the banking sector. Additionally, we found new indexes created to evaluate the M&A performance or the concentration degree of the market due to and after M&A operations. There are papers that assess different theories, such as the merger waves theory, the concentration-fragility hypothesis, the too-big-to-merge, too-big-to-succeed or, too-big-to-fail theories and so on.

Key Words: *Mergers and acquisitions, research, trends, review.*

JEL Classification: *G34, M14.*

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CHANGES IN THE FINANCING OF MUNICIPALITIES AND LOCAL GOVERNMENTS OF SELECTED CITIES: POSSIBLE EFFECTS ON DISINTEGRATION PROCESSES AND MUNICIPAL POLICY

Pavel Roubínek, Petr Kladivo, Marián Halás, Jaroslav Koutský, Zdeněk Opravil

Introduction

There was a significant reduction in the number of municipalities in the Czech Republic in the era of socialism. This was a consequence of the application of the central system of settlement, which was based on Christaller's theory of central places. In connection with the changes after 1989, there was a disintegration of such integrated communities and the situation has since stabilized. A number of small villages were renewed but cities with inhabitants of a hundred thousand (population of these cities oscillates around a hundred thousand inhabitants) did not experience such processes. Due to this fact the big cities in the Czech Republic are typical for their larger size because they also administrate smaller residential units of rural characteristics, often many kilometers from the city centers. These administrative parts of the cities are managed in different ways. In connection with the manifestations of suburbanization during the past twenty years, the transformation of the social structure of the inhabitants in these "suburbs" and changes in rules of municipal budgetary allocation of taxes (hereinafter BAT) there is the question of sustainability and stability of such defined borders of municipalities. The paper presents opinions on the development of the financing system and attempts to analyze the motives of the peripheral parts of selected cities with inhabitants of a hundred thousand to remain part of or separate from these cities. In connection with changes in the BAT made on 1st January 2013, the financial motive can have an important role. The main aim of the paper will be a comparison of the current financial income of these municipalities with previous periods in relation to changes in the BAT and assess the impact of these changes on the potential disintegration processes and municipal politics. The process of urban disintegration and creation of a new municipality is not easy and is provided for in the legal system of the Czech Republic. The paper also gives an overview of this legislation. The authors focus on the cities of Olomouc and Pardubice. The whole study follows on detailed research of the suburban zones and its development in the hinterlands of cities with about 100 thousand inhabitants. Theoretical results are confronted with a real situation in municipalities, the main source of information from practice were structured interviews with representatives of 20 municipalities, mainly mayors.

1. Theoretical Background

The financing of local governments defines an important framework for their successful operation. Territorial governments provide a range of services to the population, so it is essential that the system of local government is as efficient as possible [26]. Optimization of the space systems, respectively public finance system in general, and more specifically the distribution of finances and competences between the central (national), regional and local levels are also discussed in the theory of public finance. One of the basic theories of public finance is the theory of fiscal federalism. This theory arose after World War II and began to develop mainly during the 50s-70s of 20th century. It was created for reasons of inefficient allocation of funds for the provision of financial assets in the public sector, which began to show

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a tendency towards strengthening the role of local government, in particular the powers and responsibilities of municipalities in decision making and in the economic sphere. The public sector is in most countries divided into several administrative levels and these levels share the execution of public administration. The consequence of this division is the existence of multi-stage organization of public budgets and the relationships between them. Peková [24] states that the theory of fiscal federalism is based precisely on the existence of multi-level government and the optimal allocation of powers and responsibilities between them. The development of this theory was possible thanks to economists in the Anglo-Saxon countries (Charles Tiebout, Richard Musgrave, Wallace, Oates). Musgrave [20] outlined an alternative attribution of functions to different levels of management. Tiebout [37] had already pointed out "voting with feet" which explained the decision making of inhabitants in a particular region (city or town) according to its actual preferences towards public goods on the one hand and on the other hand according to the willingness to pay local taxes (He actually formulated the so-called fiscal migration hypothesis). Even in the most detailed work on fiscal federalism Oates [22] points out that population mobility helps to increase the effect of decentralization but at the same time it might not be necessary for the actual decentralization of local public goods.

Based on the works of Musgrave and Tiebout [20], [21], [37], [38] we talk about the model of the so called "layered cake". It is the organization of relations within the public sector and public finance. The central government should exercise particular stabilization and fiscal redistribution functions, regional or local government should focus on fiscal power allocation function. In this case it is the horizontal model of fiscal federalism. This is a separation of powers where the central decision-making is connected with decentralized execution of functions. The vertical model of fiscal federalism (or vertical structure of the budget system) can be either in centralized, decentralized or combined form [24]. The second case is a horizontal model of fiscal federalism (horizontal structure of the budget system) which is typical for the financial relations between different levels of government budgets in a horizontal line. Central decision making is accompanied by decentralized exercise of the functions. When the central administration is mostly underdeveloped. The principle of solidarity is followed. Tax policy and tax legislation is uniform and centralized [26].

In recent decades, the Central European countries put emphasis on the issue of fiscal federalism. Especially in the context of the increasing role of local governments and the process of decentralization and deconcentration. In many states there were or still are ongoing reforms of public administration, which led to transfer of certain powers and functions to lower levels of government [18]. In this process, the issue of public finances and public administration often appears as a topic for academic study [4], [19], [25], [34]. In addition to fiscal federalism there are also concepts of fiscal autonomy and fiscal decentralization in the scientific literature (e.g. [3], [7], [9], [13], [31]). These terms cannot be considered synonyms. Fiscal autonomy in general refers to the ability of territorial and administrative units to provide the desired level of income, and subsequently determine how to use it for the benefit of the inhabitants of this unit. It is in fact a subset of fiscal federalism, which addresses a much broader relationships, e.g. in relation to the central level of government. Fiscal decentralization is a process leading to greater fiscal autonomy (transfer of legislative and political powers in planning, decision-making and control from the central level to a lower level – closer to the citizen). The fundamental task is to search for the optimal degree of decentralization of the public sector to lower government levels and an increase in the effectiveness and quality in financing its needs. Tanzi [36] distinguishes between fiscal and administrative decentralization. We talk about the fiscal decentralization if the lower administrative units have the powers given by legislature to choose and impose taxes and bear responsibility for their spending activities. Conversely, if the majority of the taxes are levied at the central level and revenues are redistributed to local decentralized administrative units and their spending activities are carried out under the control of the central government, Tanzi [36] speaks about administrative decentralization.

Topics of competences, system settings of governance at the local level are associated with decentralization and fiscal federalism. This is based on the idea that you cannot govern effectively from a single (state) center.

Partial decentralization of the public sector also helps to increase the intensity of public control over the spending of public funds. The functioning of local administration sometimes uses the term "local state" in the literature. This does not mean full sovereignty typical of state but only the administration and management of local administration units. Linking the two levels can also be called a "dual state" [28]. The theory of local autonomy is also developed by Clark [8], who in this context speaks of two primary principles of local autonomy: power of initiative and power of immunity. Initiative refers to the power to act, to enact own legislation and regulate the activities of private persons. Immunity refers to the power to do without the supervision of higher levels of the state. In the case when a local government has power of initiative and immunity, it is a full local state. If the local government lacks initiative and immunity local authorities are merely an administrative tool of the higher levels of the state.

In the cities and larger towns there is an alternative distribution of management and competence on local (municipal) level to the other two "sub-levels". According to this system Barlow [1] states three basic models of large cities:

a) polycentric model,
b) unitary model,
c) two-stage model.

In a polycentric model there is no directly elected central government (local government) for the entire city. Management is decentralized to local authorities. There is no citywide level management, long term planning and the link to the regional level is problematic. This control method is practically nonexistent in Europe. Unitary model has one central authority which covers the entire city. The main shortcoming here is excessive centralization and the ability to solve partial problems of individual urban areas and their citizens. The two-stage model should combine the advantages of the two previous models, reducing the effects of fragmentation, while maintaining the benefits and the existence of smaller units. Many authors emphasize this model for its greater respect for the values of participation, and the availability of local identity. In the case of the application, there is an important debate on the question of competences which should be kept at the city-wide level and which should be further decentralized (e.g. [2], [14], [30]). In the Czech Republic the statutory cities should have a seemingly two-stage model management but in fact it is not entirely clear. Only eight of the twenty-six statutory cities have directly elected bodies (local government) at two levels: Prague, Brno, Ostrava, Plzeň, Liberec, Ústí nad Labem, Pardubice and Opava (Tab. 1). Liberec and Opava are also special cases. Liberec has a specific way of managing with only one city district and the rest reports directly to city authorities, Opava has eight local government units in the suburbs of the city, and the city center is managed directly by the city authorities. Other statutory cities have a unitary governance model, where lower-level authorities are not directly elected local government. They have limited powers and only an advisory function [11].

Setting the municipal financing rules of budget tax (MFRBT) or setting alternative fiscal autonomy is an important issue for management, control and generally for the development of cities and villages. The dominant revenue from taxes, tax determination, is connected with the determination of the optimal vertical structure of taxation. McLure [17] emphasizes the importance of these issues when decentralizing taxes: Which level of government decides which taxes the government imposes? Which level of government sets the tax base? Which level determines the level of tax rates? Which level manages the level of taxes? In this context there is also important legislation correcting the level of indebtedness of municipalities that are significantly different in each country and in some cases participation of citizens in a referendum may be reflected [29]. Nominal amount of redistribution of finances for municipalities depends apart from setting of parameters described in the paper on the total amount of tax revenues. These can be optimised by the correct setting of tax policy [10]. The enhancement of fiscal union can be helped for instance by activities of local leaders or NGOs, mapped in detail in the contribution of Laboutková [15].

In the Czech Republic, the system of financing of municipalities is important particularly for the outskirts of large cities, which are often affiliated to former independent residential units [12]. Their management and financing may be significantly different depending on whether they are or are not part of the central city. The analysis of this question will also be the subject of this paper.

2. The Current System of Self-Government of Cities with a Hundred Thousand Inhabitants Regard to Olomouc

Already the Act No. 367/1990 Coll., on municipalities (local government) [45] and Act No. 418/1990 Coll., on the capital city of Prague [49], stated that the statutory cities and the capital city of Prague can be divided into self-governing districts as determined by the board of representatives of the statutory city in the state of the city. But there is a discrepancy in the breakdown of statutory towns in the Czech Republic because not all use the opportunity to further breakdown their structure, respectively into two-stage management (i.e. each district has its own council and mayor). This matter is currently in compliance with applicable legislation fully in the competence of individual cities.

Tab. 1: The statutory cities with two stage system of government

City	Type of division
Praha	22 urban administrative districts (internal division) and 57 city districts
Brno	29 city districts
Ostrava	23 city districts
Plzeň	10 city districts
Liberec	1 city districts, the rest is subject directly to the authorities of the city (35 city parts)
Ústí nad Labem	4 city districts
Pardubice	8 city districts
Opava	8 city parts, the center of the city reports directly to authorities

Source: official websites of cities; web CZSO (2013)

Olomouc belongs among autonomously undivided cities with one hundred thousand inhabitants. There are, however, the commissions of city districts which are established and dissolved by Olomouc City Council (hereinafter OCC). These commissions (total 27) have a certain city allocated funds (300 thousand annually) which they manage. Fundamental decisions are taken at the city level (OCC) and the Commission are actually rather an advisory capacity. At the head of each city district commission is the Chairman who is appointed by the Mayor of Olomouc (Statute of the city district commissions 2011) [32].

Based on information obtained during interviews with selected chairmen of city district commission it can be said that this is essentially a voluntary function because reward for its execution is set at 1,900 CZK per month for the President and 500 CZK per month for members of the commission. The Number of members in the city district commission is 5–15, composition reflects and respects the municipal council elections in Olomouc. The problem is a small interest in the membership in the Commissions and the high average age of their members. The Chairmen of city district commission are brought together and managed by municipality workers (Public Relations and Information Department, department of city district commissions). The presidents of the city district commissions should transmit incentives to the department which should address them in the operation of the City Council. However, this cooperation according to the gathered information does not work. In urban areas there are detached workplaces of the municipality, which are regularly visited by a specialized worker. But in the case of some districts (Chomoutov) the worker does not go there regularly and doesn't do anything. The chairmen of city district commissions (mainly peripheral districts) would clearly welcome higher autonomy of city district commissions respectively decentralization of municipal government (the so-called "small City Halls"). The problem in the case of some parts of the cities is the fact that the negotiations with the city are affected by personal relationships and also as to whether a member of the council or

the city council is a resident of one or another district (own research 2013). Among other cities with hundred thousand inhabitants which are autonomously undivided we can include cities Hradec Králové or České Budějovice that are divided into České Budejovice 1–7 but they are not autonomous.

3. The Settlement System of the Czech Republic, the Integration and Disintegration of Municipalities in History

The Settlement system of the Czech Republic is characterized by several specific features. It is primarily a very high density of settlements, their uneven distribution, a high frequency of small rural settlements and the relatively small number of large cities. Additionally, you can find significant regional differences, such as a dense network of small settlements typical of the Czech and Czech-Moravian highlands, while the areas of Moravian and Silesian lowlands typically have larger and more remote settlements [6].

The current form of the settlement system of the Czech Republic is a long lasting result of various historical processes. The number of settlements reached it's historical peak in the High Middle Ages. Then there was a decline in their numbers, especially due to various wars (Hussite wars, the Thirty Years War) or unsatisfactory financial performance of municipalities. The Thirty Years War was an important milestone because after this war there was stabilization in residential structure which has lasted up till the present day.

The term settlement is in geography perceived as an elementary unit of population [16]. Settlements are therefore cities, villages and spatially separated districts of municipalities, etc. no matter what their administrative status – whether they are or are not the autonomous municipalities. The average size of municipalities in the the Czech Republic amounts to 1,634 inhabitants [5]. Fragmented population structure is not special within the Central European conditions. The smallest average city population in Europe (1,300 inhabitants) belongs to France [39].

There were many theories concerning the ideal size of the municipality in history. In general, most of them emphasized the increase in the average size of the municipality (due to reduced costs and increased efficiency control). Many of these theories have become the official development policy instruments of some states. In our environment it was so called central system of settlement proposed in 60s and 70s of the last century by a group of Czech urban planners, which became for some time the basis of official policy of territorial development of the former socialist Czechoslovakia.

The Hierarchical system of mainframe sites should have become the framework of settlement systems. These sites should have become focal points of territorial development, services to residents in its vicinity and be objectives of investment. The system distinguished between three respective levels of mainframe sites (centers). Large rural municipalities with 1,500–2,000 inhabitants were chosen as the centers of local importance. In addition to its own population, centers should have provided basic needs for the population of smaller non-mainframe sites in its facilities, including about 3,000–6,000 inhabitants. Rural settlements not included in mainframe sites - non-mainframe residental units were divided into two groups: the first consisted of permanent character settlements and the second consisted of other residental units. As suggested by the terminology, maintaining other residental units wasn't expected in the future. Around 1,700 centers of local importance have been identified. A higher degree was formed by centers of the district significance which were fully equipped and offered higher services to the population in the vicinity covering at least 50,000 inhabitants. There were nearly two hundred of them – they were the cities with 30–80 thousand inhabitants. The third and the highest degree consisted of centers of regional significance, which should have provided their residents and residents from the surrounding area the most demanding services. This category included the 20 biggest cities. Centers of the district and regional significance should have received crucial part of the investments.

Despite the fact that these centers should have been means of planned regulation of settlement and for some time actually influenced the spatial distribution of investments, this system was included among projects of utopian character. Gradually, it has been found that it is too schematic and directive and underestimates the significance of the impact of spontaneous and hence unforeseeable development factors whose spatial distribution defied the

predetermined nomenclature. Despite the regulation settlements which weren't expected to develop developed and vice versa. The system underestimated the developing importance of regional location of settlements, often more important than their population size. Because the central system gradually lost its regulatory function and disappeared from official documents during the 80s [39].

The introduction of the central system of settlement resulted in a drastic reduction of municipalities in our area (administratively). Just between 1970 and 1980 there was a reduction in the number of municipalities by almost 3,000 (7,511 municipalities in 1970 and 4,778 in 1980) [27]. Municipalities were not obviously physically destroyed, but there was an administrative integration. It basically acquired two forms: either the municipalities were merged into a new territorial unit, or were managed (without merging) by another larger municipalities and its national committee. Municipalities therefore existed but failed to meet basic settlement functions and stopped developing [35].

In connection with the changes after 1989, a municipal system was established in 1990 with a guarantee of autonomous self-government administrative unit, municipality. The process of disintegration of municipalities into smaller administrative units was immediate consequence. From 1989, largely in response to the previous compounds, process of division of municipalities spontaneously started and a significant number of municipalities within a relatively short period of time disintegrated into autonomous units. The driving force of this process was an attempt to regain autonomy for the formerly independent municipalities. If in 1990 there were 4,100 independent municipalities in the Czech Republic, in 1994 there were 6,230 (CZSO). On 1st January 2013 there were 6,253 municipalities and approximately 15,000 settlements in the Czech Republic (CZSO). The number of municipalities is therefore about the same as in the mid-nineties, when a wave of euphoria subsided after 1989. Only eight new municipalities have been established since 2005 (CZSO).

4. The Legislative Framework for Creation of the New Municipality

However, in light of recent changes in the context of budgetary allocation of taxes the emergence of new motives for the disintegration of municipalities (this time voluntarily). The question is how the situation will continue to evolve. The entire process of the creation of a new municipality (disjunction) is currently based on Act No. 128/2000 Coll. on municipalities (local government) [41] and Act No. 22/2004 Coll. on local referendum and on a change of certain acts [42], as amended. *§ 21 paragraph* 1 of Act No. 128/2000 Coll. says: *"The new municipality may arise by disjunction of municipality part, which must have a separate cadastral territory adjacent to at least two municipalities forming a coherent territorial unit, after the disjunction it will have at least 1,000 inhabitants. The original municipality must also meet the same conditions after the separation of its parts."* The current applicable condition of 1,000 citizens means that the efforts of very small parts of cities to become autonomous are not usually successful. But there is a possibility that more local parts join together in the same initiative.

"The disjunction of municipality part must be approved in a local referendum of people living in the territory of the municipality part that wants to become autonomous. In the part of the community that wants to separate, citizens of the municipality establish a preparatory committee." This preparatory committee then proposes a system of local referendum and participates in its preparation and execution and disjunction of municipality. In case of a positive result of a local referendum held in the municipality that wants to separate, a competent regional authority decides on the disjunction of municipality part with delegated powers to the proposal from municipality part (in our case the city from which they want to separate the relevant parts). A Proposal to the disjunction of community and other progressive steps to disintegration are described in Act No. 128/2000 Coll. on municipalities (local government) [41].

5. The Current Rules of Budgetary Allocation of Taxes in the Czech Republic and Their Possible Impacts

Tax incomes of municipalities are one of the most important sources of income for municipalities in the Czech Republic and to a large extent affect their financial stability. The

most significant incomes of municipal budgets are the tax incomes namely tax entrusted and shared. The development budgetary allocation of taxes (BAT) in the Czech Republic can be divided into three periods: 1993–1995, 1996–2000 and from 2001 to the present. The authors will address the period until 2001.

The funding of cities and municipalities in the Czech Republic is different from other European countries. Larger cities have higher tax revenue per capita (because they perform the functions which are used by the residents of smaller communities). In contrast, small municipalities have lower tax revenue per capita. Tax revenues of municipalities and regions in the Czech Republic are mainly defined by Act No. 243/2000 Coll., On the budgetary allocation of revenues from certain taxes, municipal governments and some state funds (Law on the budgetary allocation of taxes) [43], as amended. Tax incomes of smaller municipalities under the current version of the Act are made up of a proportion of shared taxes, selected tax incomes and the motivational elements. The new law on budgetary tax is aimed at eliminating the causes of unequal income disparities of municipalities (particularly in the case of tax on personal income), removing speculative activities of municipalities in an effort to increase revenue, eliminating instability of municipalities' incomes in different development stages of regulation of taxes by extending the spectrum of taxes, from which municipalities determine the shares of the tax revenue income. The aim of the Act was also the convergence of the dynamics of tax revenues of both segments of public budgets [26]. Another reason for adopting the amendments in BAT was the need to include the financing of new and higher level of local governments (regions). Under the new BAT applicable since 1st January 2001 property taxes and all the proceeds of corporate income tax paid by municipalities remained exclusive tax incomes of municipalities.

Shared tax incomes of municipalities are: tax on personal income from employment, income tax of self-employed persons (only 70% of tax revenue), the tax on personal income collected by deduction tax, corporate income tax, unless the taxpayer are communities themselves and new tax revenue became municipality's portion of national revenue from value added tax.

The act on budgetary allocation of taxes was during its existence novelized several times, where typically the changes were caused by the need to respond to current issues in public budgets, or a need to change some points that proved problematic during the practice. By 2007, there were 14 sizes of category of municipalities based on population and the coefficient affecting the allocation of the income per capita. At the same time, there were so-called jump effects of the division of finance. The determination of the number of size of categories was based on standard deviations from the average tax revenue from personal income from employment and self-activity per capita. The individual coefficients of size categories of municipalities should have taken into account the fact that the higher population size of the municipality had a bigger scope of delegated powers [26]. This highly inefficient system of financing of municipalities, which had so called jump character when the calculation coefficients changed significantly with a certain achieved limit of population size, was carrying a number of problems. The most affected were small municipalities of 150 inhabitants, which evolved in an economic pressure on their merging (although this has never been said officially). In the category of municipalities with 200–5,000 inhabitants (the largest group of municipalities) the coefficients had a very modest increase, which contrasts with a significant jump between categories with 50 thousand up to 100 thousand inhabitants (0.8487) and the bigger the cities with 100–150 thousand inhabitants (1.0393). However, in the Czech Republic, there is significant group of cities about the same size and importance, between 90 to 100 thousand inhabitants (České Budějovice, Liberec, H. Králové, Pardubice, Ústí nad Labem, Olomouc), all of which only Olomouc exceeded this level in the long term (last year the population of Olomouc fell under 100 thousand according to data of CZSO). Due to differences in coefficient practically same sized cities, received about 20% in tax revenue per capita less than Olomouc without the possibility to interfere [26]. Imperfect size of coefficients led in practice to the activities of municipalities, which in order to obtain a higher number of permanent residents paid the "new" people different heights of financial contributions. Examples include cities like Jihlava, which needed to exceed 50 thousand residents or the city of Ústí nad Labem and Kolín [53]. Surrounding municipalities protested strongly against that. People registered

in cities but continued to live in the surrounding municipalities.

The amendment effective from 2008 (Act No. 377/2007 Coll.) [47] caused removal of the existing senseless jump transitions between different sized categories and (for the purpose of strengthening budgets of the smallest municipalities) added criterior on of the sheer number of inhabitants and the criterior on of the total area of municipality cadastral (both witch 3% weight). At the same there was a time modification of the existing criteria (the number of inhabitants) which was modified according to coefficient of the size of categories of municipalities (94% weight).

By 2007, Prague had 6.6 times and cities with one hundred thousand inhabitants had 2.5 times more tax revenue per capita compared to the smallest municipalities. After adjusting in 2007/2008, cities with a hundred thousand inhabitants had about 1.6 times higher tax revenue per capita in comparison with the smallest municipalities. From 2008 to 2012 there were four categories of municipalities by population (excluding the jump effects):

- 0–300 inhabitants (coefficient of 1.0000);
- 301 to 5,000 inhabitants (coefficient of 1.0640);
- 5,001–30,000 inhabitants (coefficient of 1.3872);
- 30,001 or more inhabitants (coefficient of 1.7629).

An exception to these rules was formed in the cities of Plzeň, Ostrava, Brno (coefficient 2.5273) and Prague (coefficient 4.2098). A fifty thousand or one hundred thousand threshold with a significant jump did not exist anymore but the bonification based on the coefficients was still quite significant (at the time of its existence until 2007 Olomouc and similarly sized cities on the border of intervals took great care to ensure that the number did not drop below this level, respectively they wanted to avoid separation of some of the parts). Regarding the positive impacts, the smallest municipalities had the largest increases in revenues from shared taxes (population 300), thanks to the newly introduced criterior of the total area of municipality that favors municipalities with low population density. The most unprofitable municipalities were in the categories of 10 to 20 thousand inhabitants and in the category of 20 to 30 thousand inhabitants.

In 2011, an amendment to the budgetary allocation of taxes was presented. It was after the debate and subsequent parametric adjustments adopted and published in the Collection of Laws under No. 295/2012 Coll. as a law amending Act No. 243/2000 Coll. on the budgetary allocation of revenues from certain taxes for municipal authorities and state funds (Act on the budgetary allocation of taxes), as amended, and Act No. 370/2011 Coll. amending Act No. 235/2004 Coll., on value added tax, as amended, and other related laws [44]. Tax revenues are distributed based on the (weights): criteria of cadastral municipalities (3%), the sheer number of people in the community (10%), multiple successive transitions (80%) and the number of children attending schools run by municipalities (7%). The Amendment Act came into force on 1st January 2013.

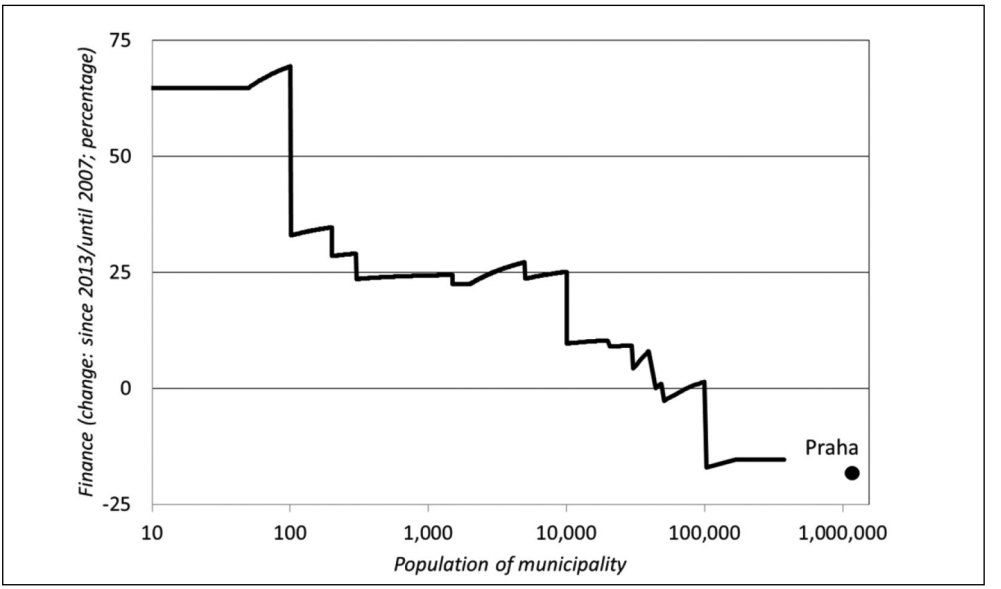
The Current categories resulting from the amendment of the Act (without the jump effects):

- 0–50 inhabitants (coefficient of 1.0000);
- 51 to 2,000 inhabitants (coefficient of 1.0700);
- 2,001–30,000 inhabitants (coefficient of 1.1523);
- 30,001 or more inhabitants (coefficient of 1.3663).

Praha (coefficient 4.0641), Plzeň, Ostrava, Brno (coefficient 2.2961)

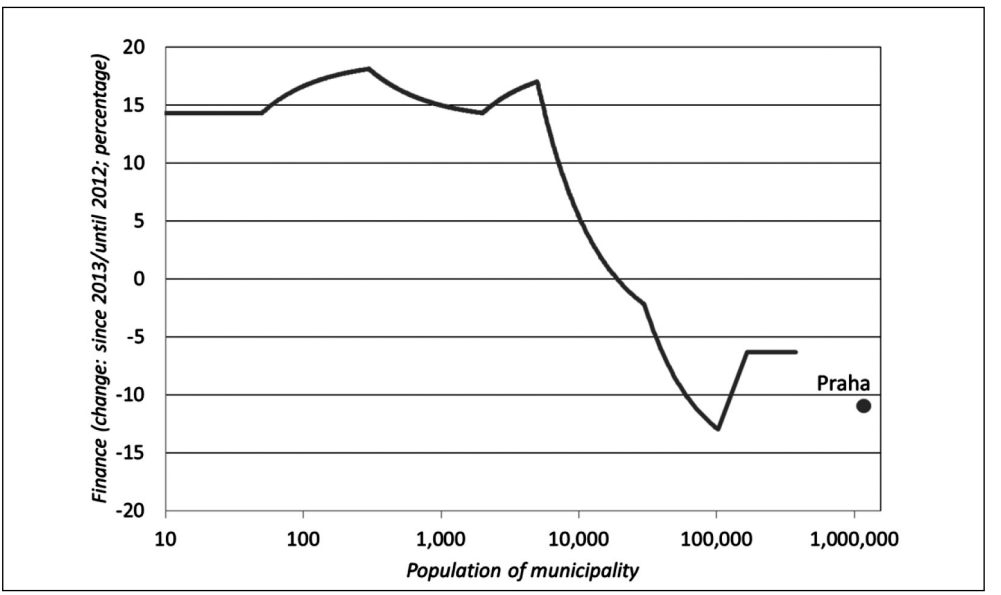
Figure 1 graphically illustrates the change (in %) of incomes of municipalities according to their size from BAT since 2013 in regard to the period up to 2008 so it is clear how municipalities in the various categories of population size bettered / worsened off. X-axis is for clarity shown in a logarithmic scale. The vertical lines represent the mentioned “jump effect” abolished since 2008. Figure 2 shows the same changes but between the periods 2008–2012 and since 2013. Both graphs are based on the theoretical assumption that the municipalities were given the same amount of money (thus it captures changes resulting from legislation, particularly changes in the amount of conversion coefficients). Figure 2 also takes into account the fact that according to the conversion coefficients only 80% of the total funding is recalculated since 1st January 2013. The remaining 20% is the criterior of the area of municipalities and the number of pupils in primary schools, as mentioned above. The factor of the area and number of pupils was not possible to include in the calculation of the

Fig. 1: **Change in share of revenues of size categories of municipalities from BAT (since 2013 / until 2007)**



Source: own

Fig. 2: **Change in share of revenues of size categories of municipalities from BAT (since 2013 / from 2008 to 2012)**



Source: own

graph as these factors are independent of the number of citizens of municipalities.

The amendment according to the results of the model calculation reinforces small and medium size category of municipalities compared to allocation of taxes under the previous wording of the law on budgetary tax. New conditions helped small municipalities (about 300 inhabitants, up by 18%), and then the municipalities of moderate size (maximum approximately 5,000 inhabitants, an increase of 17%) – generally speaking, all municipalities with approximately 19 thousand inhabitants. On the contrary larger municipality sized categories (from 19 thousand inhabitants and more) were worse off. The greatest loss is recorded in the cities with hundred thousand inhabitants, where there is a loss of about 13%. The Cities of Plzeň, Ostrava and Brno lose according to theoretical calculations about 6%, then Prague with about 11% loss.

But when comparing the total tax revenues, these changes don't have to be apparent at first glance because these changes can be compensated thanks to the area of municipalities and the number of pupils in primary schools (which helps big cities).

6. The Impact of Funding Rules on Municipal Policy and Territorial Development (Example of Cities Olomouc and Pardubice)

Looking at Table 2 the effects of changes in the rules of BAT in municipalities in the suburban area of Olomouc (definition according Halás, Roubínek, Kladivo) [12] and the city itself are apparent. In the case of Olomouc there was reduction of conversion constants by 0.3331. Though nominal value of shared tax revenue for 2013 is higher (CZK 948.5 million) compared to 2012 (945.9), hundred-thousand cities actually have less money at their disposal (see chart. 2) due to the larger volume of allocations, inflation, etc. Previously criticized separate calculation for the largest cities remained unchanged, confirming the continuing large gap in income per capita in Olomouc and Plzeň that in fact are comparable in hierarchical and spatial range of the Czech Republic. According to the fig. 2 revenues of Olomouc and Plzeň declined but, paradoxically, there was a deepening of differences between cities with a hundred thousand inhabitants and Plzeň.

Tab. 2: Tax revenues of per capita in Olomouc and selected (depending on size) municipalities from surrounding area (part 1)

Number	Municipality name	Population 2012-01-01	BAT until 2012-12-31			BAT since 2013-01-01		
			Constant *k*	Shared tax incomes (in hundreds CZK)	Revenue per capita (in thousands CZK)	Constant *k*	Shared tax incomes (in hundreds CZK)	Revenue per capita (in thousands CZK)
1	Olomouc	99,529	1.6332	945,938	9.5	1.3001	948,498	9.5
2	Velká Bystřice	3,062	1.0577	19,510	6.4	1.0974	27,232	8.9
3	Velký Týnec	2,638	1.0567	17,350	6.6	1.0886	23,594	8.9
4	Grygov	1,468	1.0509	9,661	6.6	1.0676	12,118	8.3
5	Přáslavice	1,363	1.0499	8,764	6.4	1.0674	11,026	8.1
6	Příkazy	1,229	1.0484	8,217	6.7	1.0672	10,420	8.5
7	Kožušany--Tážaly	852	1.0415	5,513	6.5	1.0659	6,946	8.2
8	Blatec	622	1.0331	4,084	6.6	1.0644	5,220	8.4
9	Bukovany	600	1.0320	3,796	6.3	1.0642	4,739	7.9
10	Tovéř	581	1.0310	3,628	6.2	1.0640	4,538	7.8

Tab. 2: Tax revenues of per capita in Olomouc and selected (depending on size) municipalities from surrounding area (part 2)

Number	Municipality name	Population 2012-01-01	BAT until 2012-12-31			BAT since 2013-01-01		
			Constant *k*	Shared tax incomes (in hundreds CZK)	Revenue per capita (in thousands CZK)	Constant *k*	Shared tax incomes (in hundreds CZK)	Revenue per capita (in thousands CZK)
11	Ústín	401	1.0161	2,601	6.5	1.0613	3,357	8.4
12	Svésedlice	190	1.0000	1,256	6.6	1.0516	1,521	8.0

Note: k is a constant, the resulting multiples are conversion by precise definitions of the regulations using the population of the municipalities to 1st January 2012. BAT revenues for 2013 are theoretical assumption.

Source: Act No 295/2012 Coll., Act No. 243/2000 Coll. as amended by Act No. 377/2007 [43], [44], [47], a new calculation of tax assignment for the Olomouc Region, available at www http://www.kr-olomoucky.cz/rozpocet-olomouckeho-kraje-cl-105.html

As already mentioned, in connection with the adoption of amendments to the rules of BAT there was reduction in differences in per capita incomes of cities and the municipalities in their suburban areas. The latest state is evident from table 2. In the case Olomouc and some other cities with a hundred thousand inhabitants some parts of the cities don't actually have (if they are organized by their authorities) opportunity to intervene in the city's management and direction of future development in the settlement unit. Although there is such a possibility in the case of Pardubice there are however appearing some expressions of discontent. Individual municipalities have, through their local councils, more freedom in terms of management and manage their own assets. In addition separate municipalities benefited to some extent from the recent amendments in the rules of BAT. However, a separate municipality, on the other hand, has a higher degree of responsibility.

In the case of many compact cities their suburbs are, in fact, settlements of rural character separated by built-up areas in the administrative city limits. Individual municipalities with a high degree of interaction with the city are in fact morphologically very similar to the rural parts of the city. Both groups show high rate of suburbanization and links to their own compact city, although suburban processes across the administrative border city of Olomouc are more intense [12]. Difference thus lies mainly in the status of these settlements. It naturally has its impacts, especially in the financing and also in management. In this context (and due to recent changes in the rules of BAT) it is meaningful to compare the advantages and disadvantages of the status of separate municipalities, respectively city districts.

From the financial point of view, it seems that for the settlements in the vicinity of compact cities it is better (although less than before) to be an integral part of the city (own research). However, the question remains, what is the actual amount of funds going from city treasury to invest in specific urban areas. For cities with multi-stage system of government it is ascertainable (Pardubice), but for cities, which are more or less controlled only the central town hall, it is very difficult to find out (Olomouc).

a) Olomouc

The advantage for the city districts is, among other things provision of waste collection, road maintenance, public lighting, green areas, etc. by technical services of the cities. These items are for separate municipalities, a considerable financial burden. Furthermore, the technical and financial background of the city is an indisputable advantage when implementing specific projects (e.g. construction of sewers in the city district Olomouc-Radíkov, which cost 73 million CZK, implemented in 2006–2008, which was paid by the city of Olomouc, would be for Radíkov as a separate municipality with a few hundred inhabitants from their own budgets very difficult to implement). The question is also a success in obtaining grants from European or other funds, where status of autonomous municipality respectively the city district may play a role.

Within the city of Olomouc and its suburban hinterland authors implemented a series of structured interviews with local players, especially the mayors and chairmen of the commissions of the city district (CCD). Total number of interviews and their structure was as follows – 18 structured interviews with mayors of municipalities in the suburban zone (including two city parts outside of Olomouc compact city) and two representatives of the affected communities were managed. All interviews were realized in the period from May to July 2013, the biggest problem was to find the intersection between free time of researchers and respondents. During the realization of interview did not appear any other problems, because the respondents received research questions in advance.

As part of this research, among others, matters relating to the possibility of separation from the city Olomouc or vice versa were identified. Chairmen of CCD in general voted for independence from Olomouc (They consider that independent municipalities would be better off both financially and through options of self-government). But it's individual and it would account only for the larger districts (e.g. Chomoutov, Droždín) with more than 1,000 inhabitants. In the case of smaller districts (Radíkov, Nedvězí) there would have to be a joint activity of more of them to exceed the limit one thousand. In general it can be said that at present there is not any activity for the separation in any of the city districts.

The mayors of municipalities in suburban zones of Olomouc clearly prefer the independence of their municipalities. An example might be Bukovany where the mayor contrasts his municipality with the neighboring Droždín (part of the city of Olomouc).the Chairman of local CCD is allegedly unable to enforce anything. He must deal with each department of the Magistrate separately, has no powers and doesn't have any significant financial resources. But for Droždín it is an unsolvable situation, because it is a road junction with Svatý Kopeček (also part of town), which will never be autonomous, because they would not be able to finance all activities related to tourism such as – ZOO etc. Striving for independence of Droždín therefore has no sense because the city Olomouc would not be territorially compact, which on the other hand does not apply to all statutory cities.

In addition, in some city districts objective obstacles arise before efforts for the separation (e.g. the above-mentioned drainage). In the case of the city district Chomoutov there is transport of sewage to the sewage treatment plant in Olomouc. In the case of separation there would be need to build its own sewage treatment plant. In addition, there always has to be a group of active people who would take the initiative for the separation, which is a problem in city districts, because there is no tradition of representatives.

b) Pardubice

Unlike the above-mentioned system of municipal government in the city of Olomouc, Pardubice has decentralized municipal authorities and there are so-called "small town halls." Thanks to last year's changes to the rules of BAT an initiative of residents for separation arose and it lead to the separation of a peripheral part of the city, the circuit Pardubice VI, which includes the local parts of Lány na Důlku, Opočínek, Popkovice, Staré Čívice and Svítkov. This locality is situated in the eastern part of the city. Within the city district preparatory committee was set up in order to create a local referendum on separation in September 2012. In this context, website was launched [23]. It serves as a platform for that initiative. Although the authors of initiative for separation do not dispute former benefits of integrating of municipalities to the city of Pardubice (construction of water mains, sewers, playgrounds, public transport accessibility, winter and summer maintenance), they point to the fact that in 2011 there was removal of certain powers of the city districts, cuts in funding maintenance and repair or that local issues are not decided by the elected representatives of the city district, but by councilors from city Hall.

The main strengths of the forthcoming separation are issues of self-government (there aren't enough people in the municipal council living in the periphery of Pardubice VI), as well as better access to services and the ability to better influence the course of municipalities by citizens. Furthermore it is a supposedly better relationship between municipality and its inhabitants (change of status of residence: peripheral city district vs. single municipality). It is important from a financial standpoint, that in the case of Pardubice VI, the district does not receive any funds from the city that it should

have available as a separate municipality. The budget of the city district finances repairs and maintenance of roads, pavements and green. Large investments (such as construction of sewer system, reconstruction of roads, etc.) are funded from the city budget. For this reason, the city district every year calls for the allocation of money for these investments almost every quarter but in most cases unsuccessfully.

In addition, the city of Pardubice has no rules for the allocation of investment that would ensure balanced development of all parts of the city. Priorities are therefore investment in the city center and the quality of living conditions rises in peripheral parts only very slowly [23]. In the case of the separation the new community would have (under the current rules BAT) after the inclusion of tax and other revenues budget of about 63 million CZK which, according to calculations would covers the needs of communities by a large margin, including the costs of maintenance of existing public transport connections, the cost of waste disposal, lighting, summer and winter maintenance, operation of educational facilities and municipal police. The Population of the new municipality would be about 5,500. Other benefits were seen in matters of property tax, the possibility to apply individually for grants and subsidies, the possibility to act independently with large firms and the possibility of their own rules within the admission of children to kindergartens.

In the district of Pardubice VI the preparatory committee had received a sufficient number of votes required to hold a referendum (about one fifth were for), but this will not take place and the efforts on the separation has so far been postponed. There are several reasons. There is a rivalry between residents of the local parts of the city district, its role allegedly played argumentation of representatives of the city of Pardubice. In addition, city officials want to leave the future of the layout of the city for people to decide. Members of the Preparatory Committee, therefore, decided to wait for the results of referendum, because if the current preparatory committee announced a referendum that would not end positively, the possibility of holding a referendum on independence would be postponed for the next two years.

Conclusion

Most of the cities with a hundred thousand inhabitants in the Czech Republic include not only their own “real” clearly graspable urban space but also units of suburban and rural character, morphologically separated from typical urban development. These are largely the municipalities integrated in 70s and 80s of the 20th century in connection with the central system of settlements. This definition does not need to undergo criticism. Locations lying in the discontinuous urban area of cities have the option of alternatives: remain as part of the city or separation if they deem it convenient. Changes realized in the budgetary allocation of taxes, which strengthened to some extent smaller municipalities and the actual malfunction of multi-stage control system in some cities may play a role in the future. Some civil initiatives have already appeared (Pardubice). In addition, cities are no longer motivated to overcome some limit at all costs (for example hundred thousand inhabitants) as the jump effects were removed and losses in the order of several hundred inhabitants are not that important in the case of separation of some municipal districts. However, losses in the order of several thousand people would affect large cities significantly. It should be borne in mind that although the city is losing part of the funding it also saves because some mandatory spending and investments in separated urban areas (city districts) wouldn’t be needed.

To determine whether and to what extent the new conditions of BAT valid from the beginning of 2013 will affect the disintegration processes related to towns and rural settlements will be shown in the development in the coming years. The results of structured interviews with mayors of municipalities in the immediate hinterland of cities with a hundred thousand inhabitants, and representatives of non-autonomous city districts show that it may be a significant motivating factor. But there are several others factors affecting these issues. For example the tradition of local government in new potential municipalities (interrupted by integration in the second half of the 20th century), interest of sufficient population (referendum on separation), facilities of the relevant parts of and theoretical minimum burden on the budget of future independent municipality (e.g., infrastructure projects, etc.), etc. The possibility to manage its own budget, decision-making on the development of the municipality or better management are important motives but they also bring many pitfalls. Among the arguments

supporting the disintegration of parts of large cities can be included an increase in financial income of mainly small municipalities from BAT and whether these potentially autonomous municipalities count (or not count) with the implementation of major investment projects. These can make a significant burden for individual municipalities and are often realizable only in the larger city budget. Among the arguments against the creation of new municipalities we also count weaker awareness of new BAT and its practical implications on government municipalities.

On specific cases, such as the city of Olomouc, as we have often mentioned, certain disadvantages of central city management with minimal self-government tools can be detected. These smaller municipalities, respective association of their representatives, commissioners, have the status of advisory only, without the possibility to influence the distribution of investments in the city and lobbying for their part associated with the potential development. Thinking about the potential autonomy of city districts is often a politically unsolvable question, although our survey showed that is has support among the general public.

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Abstract

CHANGES IN THE FINANCING OF MUNICIPALITIES AND LOCAL GOVERNMENTS OF SELECTED CITIES: POSSIBLE EFFECTS ON DISINTEGRATION PROCESSES AND MUNICIPAL POLICY

Pavel Roubínek, Petr Kladivo, Marián Halás, Jaroslav Koutský, Zdeněk Opravil

There was significant reduction in number of municipalities in the Czech Republic in the era of socialism. This is a consequence of the application of the central system of settlement, which was based on Christaller's theory of central places. In connection with the changes after 1989, there was disintegration of such integrated communities and the situation has stabilized. Number of small villages were renewed but cities with hundred thousand inhabitants (population of these cities oscillates around hundred thousand inhabitants) did not experience such process. Due to this fact the big cities in the Czech Republic are typical for their larger size because they also administrate smaller residential units of rural character, often many kilometers from the city centers. These administrative parts of the cities are managed in different ways. In connection with the manifestations of suburbanization during the past twenty years, the transformation of the social structure of the inhabitants in these "suburbs" and changes in rules of municipal budgetary allocation of taxes (hereinafter BAT) there is the question of sustainability and stability of thus defined borders of municipalities. The paper presents opinions on the development of financing system and attempts to analyze the motives of the peripheral parts of selected cities with hundred thousand inhabitants to remain part or separate from these cities. In connection with changes in the BAT made on 1st January 2013, the financial motive can have an important role. The main aim of the paper will be a comparison of the current financial income of these municipalities with previous periods in relation to changes in the BAT and assess the impact of these changes on the potential disintegration processes and municipal politics. Process of urban disintegration and creation of a new municipality is not easy and is provided for in the legal system of the Czech Republic. The paper also gives an overview of this legislation. Authors focus on the cities of Olomouc and Pardubice.

Key Words: *Finance, municipalities, budgetary allocation of taxes, fiscal federalism.*

JEL Classification: *H72, H77, R51.*

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MEASURING CUSTOMER SATISFACTION AND LOYALTY IN SPA COMPANIES

Eliška Vildová, David Martinčík, Jan Tlučhoř, Dagmar Jakubíková

Introduction

The question of customer satisfaction became one of the central themes of marketing in the late 1970s. One of the reasons was and has been the growing importance of services with a marked shift towards increasing quality. This is evident in the development of selected economic indicators, as well as by analyses of the contribution of services. Present-day customers are more informed, they are becoming more emancipated and demanding, and they want to receive first-rate services, i.e. services that fully meet their requirements. The needs and requirements of every tourism participant change over time depending on their health condition. Spa tourism represents a special form of convalescence with emphasis on health and preventive care.

The development of spa tourism is preconditioned by the existence of natural healing resources (i.e. natural healing waters, gases, bog and climate) that affect the focus of spa treatment. Grounded on the exploitation of natural healing resources, spa treatment is combined with medicamentous therapy, diet therapy, and rehabilitation. Spa treatment is aimed at disease prevention, health improvement and, consequently, at reducing the incapacity for work of the population.

As of June 2013, there were 37 spa locations on the territory of the Czech Republic, operated by 90 spa entrepreneurial entities with the total number of 27,000 beds [4]. At present, these spa companies offer a wide portfolio of services – medical, therapeutic and rehabilitation care, wellness services and hotel accommodation. According to the Czech law, no. 48/1997 medical rehabilitation care (spa care) is provided as indispensable part of medical (healing) process. The law divides two types of medical rehabilitation care, which are covered by public health insurance and has to be allowed from inspection doctor of the health insurance company: (1) comprehensive spa medical rehabilitation care (further referred as comprehensive spa care) and (2) contributory spa rehabilitation care (further referred as contributory spa care – treatment is covered from public health insurance funds while accommodation and boarding is paid by the client). The main difference is in the level of health insurance contribution to the cost of the spa care. Historically this kind of spa care has been typical and prevailing for most Czech spa locations and it´s granted to Czech citizens only. Beyond this system of spa care there are other clients of spa companies, so called self-payers (they are accepting the system of medical spa care, but they finance their stay by themselves or better to say not from the Czech public health insurance system), Usually such spa care stays are long-term stays (at least 14 days). We can also find another groups of customers in spa hotels – e.g. regular hotel guests (no use of spa facilities), wellness guests (short stays, some use of spa facilities and service).

This article focuses on such spa companies, which are offering their services to a wide range of domestic and foreign guests. Their sales are no longer only dependent on stays within the comprehensive and contributory spa care segment. Nowadays, they are tourism-oriented enterprises, which don´t focus on a single target group. They are dealing with diverse customer segments – domestic and foreign and to foster their business success they need to understand diversity or diversification, which stem from the naturally present differences in the human society. Communication is often influenced by prejudice and individual cultural differences, and when not understood properly, the achievement of the desired business success tends to be quite difficult. [6]

In 2012, the regulation of Department

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(Ministry) of Health of Czech Republic no. 267/2012 limited spa medical rehabilitation care covered from public health insurance. For example, in comparison to previous regulation from 1997, the length of comprehensive spa care has been limited from 28 to 21 paid days, the length of contributory spa rehabilitation care has been limited from 21 to 14 paid days, some medical indications have been deleted from the list of paid spa care etc. This change affected Czech spa companies greatly. For example, during the first 6 months of 2013, there was a decrease in recommended spa care by 37% compared to 2012. In the course of 2012, spa care had already been gradually limited in the light of the changes that were to be introduced. If we look at a comparison with 2010, it is obvious that comprehensive spa care experienced a 43% drop and contributory spa care a 30% drop, compared to 2013. This drop in spa care covered by public health insurance is extreme. Most spa companies had to undergo rapid changes in promotion, target group orientation, and in general, they had to change the product structure and service offer. [1] Recently, The Constitutional Court of the Czech Republic limited the legal force of the Regulation no. 267/2012 to the end of 2014 and an actualization of the law no. 48/1997 is being prepared. This new regulation should partially restore the situation valid before 2012.

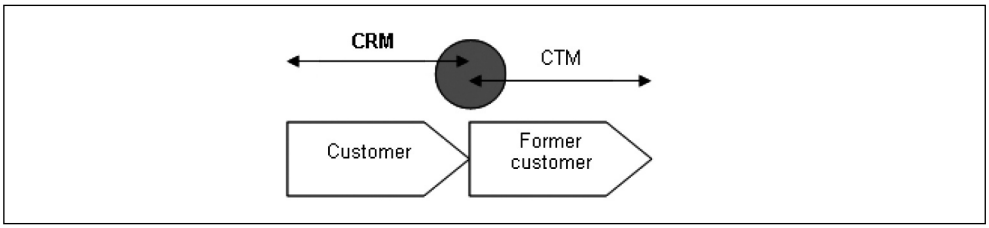
The importance of balneology as a part of the tourism industry is of considerable significance for the Czech Republic. The tourism industry GDP share was 2.7% in 2011. In the same year, the number of people employed in the industry amounted to 231,266, which represents 4.56% of the total number of employees. The number of guests staying at mass accommodation tourist facilities amounted to 12.9 million in 2011, 706,838 of whom were accommodated at spa facilities, i.e. 5% of all visitors. Measured in bed nights (38,235,088 in all accommodation facilities, 6,857,724 in spa facilities), the share amounts to almost 18% [21]. Balneology is therefore of vital importance for tourism in the Czech Republic. The company under review provides services in West Bohemia, namely in the Region of Karlovy Vary. In 2011, the Region of Karlovy Vary received 709,733 guests, 426,976 of whom were accommodated at spa facilities. Spa guests make up approx. 60% of the total number of visitors and they are thus of substantial relevance for the region.

1. Customer Satisfaction and Loyalty

Building customer loyalty and fidelity has always been a priority for balneology and it has become one of the fundamental traits of present-day modern marketing. Quality, customer services, as well as other marketing activities form one complex. Relationship marketing strives to interconnect all these elements and to combine them to achieve a synergic effect. Kotler and Keller [15] see the relationship marketing as a part of the holistic marketing concept, which consists of four main components: relationship marketing, integrated marketing, internal marketing, and socially responsible marketing. In times of intense global competition, a customer-oriented business policy belongs among the fundamental preconditions for business success. *"Customer relationship management embraces employees, business processes and IS/IT technology with the aim to maximise customer loyalty and to consequently increase the company's profitability. It is a part of corporate strategy and as such, it becomes a part of corporate culture. In terms of technology, it makes use of the potential and the possibilities offered by the Internet more increasingly."* [5, p. 18] Customer relationship management (CRM) comprehends a process ranging from customer acquisition (CCM – Customer Creation Management) and retention (CRM) to customer churn (CTM – Customer Termination Management). One of the essential objectives in business is to achieve customer satisfaction at all levels. For the purposes of this article, its authors focus only on the "gap" between customer retention and customer churn (Fig. 1). First step to customer retention is their satisfaction with products of the company.

Although literature provides a general definition of satisfaction, the authors of this article believe that there are several levels of satisfaction. The first level may be considered as simple satisfaction. The second level represents the willingness to recommend the product or service to others (fidelity). The highest and most valuable level is loyalty when the customer willingly recommends the product or service to others and returns. In this case Iordache a Sirbu [12] use the term customer enthusiasm. Kotler and Keller [15] define satisfaction as *"the level of satisfaction of a customer's expectations that is linked to how the customer perceives and values the purchased product"*. The Czech Technical Standard CSN EN ISO 9000:2006

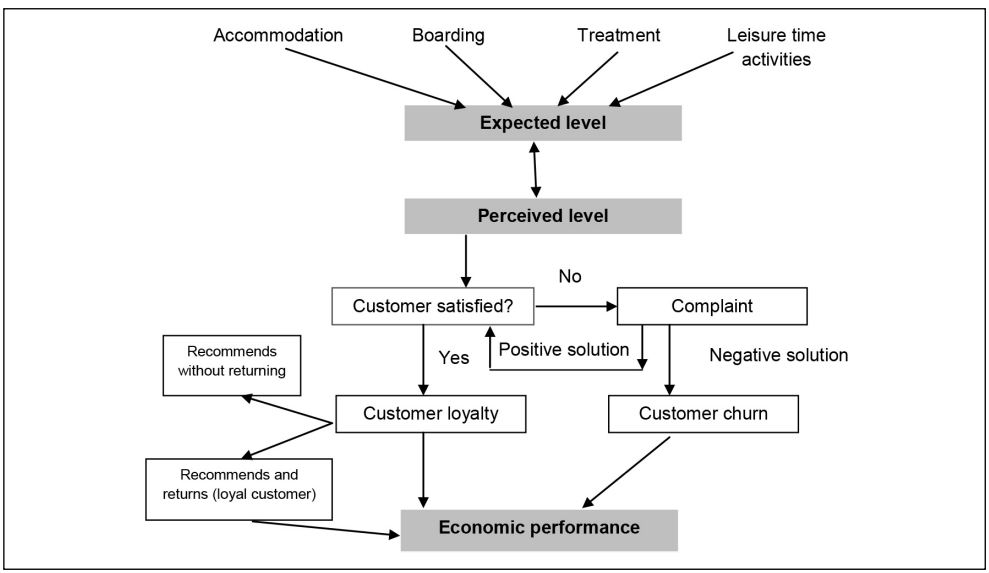
Fig. 1: Area of customer relationship management under review



Source: Own diagram according to Lehtinen [17]

defines the term *"as a customer's opinion on the level to which a business case fulfilled the customer's needs and expectations".* More authors, e.g. Moon-Koo, Myeong-Cheol, Dong-Heon [23], mention a definition of satisfaction by Oliver: "*Customer satisfaction generally means customer reaction to the state of fulfilment, and customer judgment of the fulfilled state.*" The same authors state that a high level of satisfaction increases the level of loyalty and that the main factor of satisfaction is the customer's own perception of the services quality. This view is also supported by McDougall and Levesque [19] who besides other industries monitored restaurants as well. These definitions are consistent with the Proposal of Spa Guest Satisfaction Model provided in Fig. 2. This proposed model shows some limits for guests on comprehensive and contributory spa stays, because some of their payments and their return rate are to a certain point regulated. An overview of loyalty definitions provide Szczepańska and Gawron. [29]

Fig. 2: Proposal of Spa Guest Satisfaction Model



Source: Own diagram according to Nenadál [24]

Satisfaction is closely linked with complaint (the customer's dissatisfaction with the rendered performance may lead to a complaint). Momberger (in [2]) associates complaint with the issue of quality and he puts both these areas in the foreground. The authors of this article deem that some definitions fail to state that if the complaining customer is satisfied (the complaint is resolved according to the customer's expectations), such customer becomes loyal to the particular company (see Fig. 2). Momberger's research shows that a company may reacquire an unsatisfied customer, provided, that it takes the customer's complaint seriously and attempts to resolve it as soon as feasible. There is a tolerance zone of complaint response, so called tolerance field, between the expected and acceptable response. If a standard acceptable response is not achieved, there is dissatisfaction because not even the minimum requirements of the customer based on the complaint were met. If the perceived complaint response is on the acceptable response level, the customer becomes disinterested or there is a low level of satisfaction with the response. According to Stauss ([9]), the following factors determine the level of expectation and tolerance zone's width: understanding of the customer's role, problem's relevance, perceived fault of the provider, explicit and implicit promise, experience with complaints, verbal communication, and expected response to the complaint. As mentioned in the introduction, differences may exist within individual diversities. The Czechs are generally denoted as frequent complainers, yet they go over to a new provider only exceptionally. The German customers who form a significant section of the Czech spa guests are fairly conservative. [11]

The issue of satisfaction also examine e.g. Stauss and Seidel [28], Kozel [16], Meffert, and Bruhn [20]. They focus on a comparison of the benchmarks and actual perception. The relationship between these two variables stands in the foreground and their comparison may result in three different situations: (1) perceived level > expected level; (2) perceived level = expected level; (3) perceived level < expected level.

The perceived level means the current state of the received service. Nonetheless, there is a difference between objective and subjective performance. While objective performance is the same for all customers, subjective performance is based on a variety of perceived effects that may differ with each customer. The existence of a large number of perceived performance levels for one state is no exception. The expected level expresses the customer's expectations in relation to the provided services. Literature often mentions various benchmarks (e.g. expectations, experience standards, or ideals). While expectations mainly concern the expected performance level, experience standards build on the experience of customers with the same or similar product or service. [14]

In addition, satisfaction may be viewed from several perspectives: **Economical** perspective: A customer makes a purchase under conditions that are consistent with the value of the service for the customer. One of the possible approaches envisaged by Simová [27] is the perception of value as a multidimensional concept, comprising both functional and affective dimensions. In this article, the economical perspective of satisfaction will be preferred. **Psychological** perspective: An essential role is played by emotions. Vysekalová [30] claims, "*the conception, existence and satisfaction of needs as the base of motivation are intertwined with emotions, the satisfaction of a need always carries a positive emotional accent*". **Sociological** perspective: It examines customer behaviour from the point of view of the environment in which the customer lives and the community with which the costumer associates.

2. Selected Approaches to Measurement of Customer Satisfaction and Loyalty

With the growing significance of customer satisfaction over the recent years, some countries have introduced national customer satisfaction indices (e.g. Switzerland – *Swiss Index of Customer Satisfaction)*. The development of these indices is recorded in an easy-to-understand way e.g. in Johnson et al. [13]. This type of indices provides a more in-depth understanding of the relationship between the customer and the company with the aim to acquire findings that would aid in the planning and implementation of improved company satisfaction programs. Each of these models presents a uniform overview of customer preferences in terms of the quality of products and services. Although the Czech Republic has

no established quality control system at present, certain areas have been making use of specific standards (e.g. gastronomy – HACCP system, accommodation – uniform (non-compulsory) classification of accommodation facilities, etc.).

The objective of this article is to examine the customer satisfaction and loyalty index at the company level. *"The principle of measuring customer satisfaction is based on measuring overall (accumulated) satisfaction, which is influenced by a wide range of partial, satisfaction-oriented factors. These factors need to be measurable and their significance (weight) for the customer with respect to overall satisfaction has to be known."* [16, p. 190] Today, a variety of different methods and models [7] may be utilised to ascertain the level of customer satisfaction, such as Satisfaction Only method, Gap analysis, Importance-Satisfaction (I-S) model, Multiplicative approach, Customer Satisfaction Index. For the purposes of this article, the customer satisfaction index will be calculated with the aid of the adapted formula according to Foret [8]:

$$CSI_j = \frac{\sum_{i=1}^{n} v_{ij} * x_{ij}}{4 \sum_{i=1}^{n} v_{ij}} \quad (1)$$

CSI_j – customer satisfaction index for the customer *j,*

v_{ij} – weight of i^{th} measurable variable for j^{th} customer,

x_{ij} – value of i^{th} measurable variable for j^{th} customer,

4 – relates to applied scale (1 to 4 scale),

n – number of measurable variables.

A term often mentioned in connection with customer satisfaction is loyalty. It represents a long-term process, a developing relationship between the service provider and the customer. A loyal customer is someone who becomes emotionally attached to a brand or a company. An important condition with respect to loyalty is customer retention. As regards the relationship between these two terms, we may say that satisfaction is opinion-based, while loyalty is a manifestation of consumer buying behaviour. The level of loyalty may be measured with the aid of the customer loyalty index. [18]

$$CLI = CSI * CRI * SRI \quad (2)$$

CLI – customer loyalty index,

CSI – customer satisfaction index,

CRI – customer retention index,

SRI – spontaneous recommendation index in relation to a company product or brand.

This index is in line for example with the model used by Oh [25] who studied the link between the perceived price, perceived quality, perceptions and customer satisfaction and the value which should then influence the intention of repeated purchase and intention of spontaneous recommendation (Oh refers to it as the Word-of-Mouth Communication intention). Yunus, Bojei and Rashid [32] chose a similar concept in studying the low-cost airlines' customers' loyalty. When the perceived services quality is understood as an independent variable implying the customer's satisfaction and subsequently also the customer loyalty. This article deals with loyalty specifically in the conditions of a spa enterprise, i.e. in the spa and medical tourism, characterised mostly by older clients who often repeat their visits. The cruise tourism studied by Petrick [26] has a similar customer characteristic. He also concluded that the customer satisfaction influences their loyalty and that the more loyal customers are more profitable for the enterprise in the end. Loyalty in the medical tourism industry was also studied by Ho, Hsieh and Yu [10]. Mohajerani and Miremadi [22] in their hotel industry research also discovered a positive correlation between the value perceived, customer satisfaction and customer loyalty.

3. Research of Customer Satisfaction and Loyalty in a Spa Company

The objective of the research was to examine the possibilities of measuring loyalty and satisfaction of customers in a spa company based on comparably simple data collection. Partial objectives are (1) to set (compute) weights for different factors in customer satisfaction index; (2) to compute customer satisfaction index (CSI) and customer loyalty index (CLI); (3) to compare CSI for different customer segments; (4) to validate the set of items used for data collection.

3.1 Research Methodology

Development of a questionnaire research was the key to carrying out the study, or specifically the selection of factors (items) influencing the

quality within the framework of the individual variables monitored: accommodation (U), boarding (J), spa treatment (L) and leisure time activities (K/S). The research took place in the following steps.

3.1.1 Research Conducted among Other Spa Companies

Sample questionnaires were collected and an online review of the websites of the subject spa companies was carried out. The objective of the review was to determine what factors the other spa companies focus on, what scales they use, and how their questionnaires are structured.

3.1.2 Interviews with Spa Guests

Customer opinions are the most valuable asset for any company. The authors have taken advantage of the opportunity to establish direct contact with customers in the form of focus group. The outcome of these interviews was the definition of factors and their items that are important for measuring the satisfaction. As mentioned in the introduction, the authors view customer groups as various diversities and thus the interviews differed depending on their nationality with respect to the customer structure of the spa company under review. Ten groups (each approximately with 10 participants: five groups with German guests and five groups with Czech guests) took part in the focus group. Those guests stayed at least one week in the spa company.

3.1.3 Interviews with Experts

From the point of view of the business managers from the other spa companies, customer satisfaction is important. Nonetheless, as the present times are not very favourable to balneology, everyone is more concerned about "numbers" than customer opinions. Naturally, inquiries among guests are conducted, yet the processing of the collected data is not ideal in many companies. The evaluations are rather simplified and the companies do not use any sophisticated model that would point to problematic areas. Within these interviews (n=10), the importance of the individual variable studied (accommodation, boarding, spa treatment and leisure time activities) in the customer satisfaction evaluation for the spa companies business managers was studied. Stipulating the expert weights for the factors in the CSI and verification of factors and items important for satisfaction were the output of the questioning. Each expert had to weight four observed variables according to his perception, in total each expert´s weights had to make up 100% in total. Experts' weights were averaged for each variable and mathematically rounded.

3.1.4 Composition of Questionnaire

Several key factors (items) were selected based on the previous steps for each variable (satisfaction determination factor) – see Fig. 2. The customers then evaluated 23 items on the scale of one through four (excellent-good-average-unsatisfactory). Factors represent the price dimension, technical quality and functional quality (mostly focusing on the staff attitude). The authors worked with the extended marketing services mix where the essential space is dedicated to the price, people, physical evidence, and process factors, as well as with the Grönroos' approach ([3]). In addition to conventional hotel accommodation, the questionnaire needed to encompass the area of provided therapeutic care (spa treatment) and leisure time activities. The authors looked at satisfaction mainly from the economic perspective.

The evaluation of the satisfaction/quality of the 23 defined items (Tab. 1) was a key part of the questionnaire. The ordinal data received was transformed into nominal data 1-2-3-4 that may resemble school grades. We believe the respondents understood it in a similar way because it is the simplest interpretation. A simple arithmetic mean was calculated from the responses in the individual areas. We got a vector of four values for each respondent, representing his or her evaluation of the four variables (factors).

The respondents were to evaluate their individual preference in the next question. They also filled in the importance (1 = the least important, 5 = the most important) they attach to the individual factors (U, J, L and K/S). These customers' preferences were then used to establish the weights in the customer satisfaction index (CSI). The weight of the specific factor was calculated as the proportion of the value given to the factor and the total of all of the values given. We will thus get a vector of four values representing the weights for the four areas, with their total equalling one.

The vector of the values of the factors is multiplied scalarly by the weights vector, thus receiving an index (scalar value) representing

Tab. 1: Questionnaire – factors and items of satisfaction

U – Accommodation		J – Boarding	L – Spa treatment	K/S – Leisure Time activities
Front Desk	Room			
U1 – Welcome	U5 – Cleanliness and cleaning	J1 – Menu quality	L1 – Medical examination	K1 – Offer of cultural events and excursions
U2 – Information upon arrival	U6 – Technical condition	J2 – Menu variety	L2 – Procedures	K2 – Quality and scope of provided information
U3 – Professionalism	U7 – Comfort	J3 – Service	L3 – Equipment	K3 – Approach of personnel of infocentre
U4 – Complaisance and helpfulness	U8 – Price/quality	J4 – Price	L4 – Hygiene	K4 – Opening hours of infocentre
		J5 – Atmosphere	L5 – Approach of personnel	S – Aquacentre

Source: own

the given customer's satisfaction. In the end the index is aligned to norm so that its highest value is 1 (the respondent answered all 23 questions as "excellent") and the lowest value 0 (all 23 questions were answered as "unsatisfactory"). The index can also be understood as a percentage fulfilment of the enterprise's goal: value 1 is a 100% satisfied customer etc.

It was necessary to add two more questions into the questionnaire to allow the calculation of CRI and SRI in order to calculate the loyalty index (CLI):

CRI – Will you use the services of our hotel during your next visit? (yes=1, no=0);

SRI – Will you recommend the services of our hotel to others? (yes=1, no=0).

The customer loyalty index is then calculated as the product of the customer satisfaction index and two binary variables (resp. CRI and SRI). The resulting value of the loyalty index for individual customer can thus be either the same as the satisfaction index, or zero. **It can be expected that the zero loyalty index is tied to the visitors with a rather low satisfaction index.**

The last part of the questionnaire was composed of answers to the segmentation questions, which would allow monitoring CSI, CLI for different company customers segments. The segmentation criteria included gender, type of stay, type of accommodation (hotel), nationality, age and number of visits.

3.1.5 Questionnaire Survey

A draft questionnaire was prepared for a pilot survey conducted at three different spa companies in 2011. Subsequently, the questionnaire was modified according to the obtained results and distributed in the company under review in the years 2012 and 2013. The survey targeted spa guests who had stayed at one of the spa hotels operated by the spa company during this period. The questionnaire is distributed upon arrival at the reception and it is available to the guests upon their request at any time during their stay. In order to motivate the guests to complete the form, it includes a competition draw for a weekend stay. In total, we received 7,442 questionnaires, which is a relatively big sample that allowed us to calculate the CSI and CLI. This sample covers approximately 9% of all guests of the company. The sample is proportional regarding the different types of stays in the company as well as age structure of the customers (compared to the basic set, the total number of all customers in the reviewed company). Nevertheless, the structure of respondents regarding each hotel of the company and the nationality of the guests is not proportional, so those results have to be handled with care. Yet, still the sizes of each observed group of respondents are broad enough to achieve applicable results. Validation of the questionnaire is performed in the chapter 4.4.

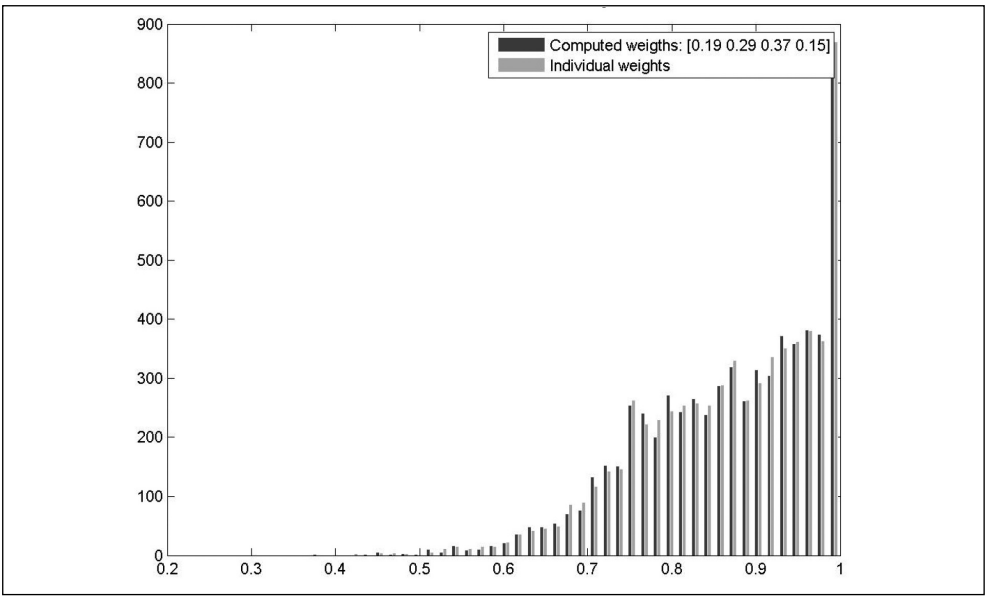
4. Research Findings

In this chapter, you will find our main research findings. All calculations have been made with the Matlab software, which made it possible to analyse the sample data in high detail.

4.1 Customer Satisfaction Index – Setting the Weights for Different Factors

When calculating the customer satisfaction and loyalty indices, the authors of this article deal with the issue whether the different levels of importance of the individual components (factors) of the spa stay (spa treatment, boarding, accommodation, leisure time activities) influence the overall customer satisfaction/loyalty calculations. One of the partial objectives is to determine, which area and what factors are important for the particular customer. Moreover, whether a change in the level of satisfaction with sub-areas could result in a change of the overall satisfaction.

Fig. 3: Histogram (empirical density) of the CSI_j index variance with use of computed weights



Source: own

An important task was to define the method of determining the weights of the examined factors. The authors decided to inquire into five methods of weight determination: (1) all areas are equally important (for comparison purpose); (2) individual guest opinions from the questionnaire survey (there is a different CSI for each customer); (3) average of the individual guest opinions; (4) expert opinion (based on interviews with experts – spa company managers); (5) calculated weights (based on the sample).

For the purpose of further calculations we prefer to work with the whole set of calculated CSI_j at the same time rather than with selected descriptive characteristics (e.g. average, median, variance) only. This empirical function of density, or histogram of absolute frequency, is presented in Fig. 3.

Let us consider a questionnaire where the respondents would not fill in the importance of the individual areas and we would not thus have individual weights of each respondent available. In such case, we would have to use arbitrary weights. The use of the so-called expert weights seems to be suitable, i.e. weights set up by experts with knowledge of the respective industry. The expert weights were set up based on interviews with the spa enterprises managers as accommodation 0.25, boarding

0.10, spa care 0.50, culture and sports 0.15. If we replace the individual weights given by the respondents with these weights, we can test if the resulting function densities correspond or not. According to Kolmogorov-Smirnov test (α=0.05) we cannot reject the zero hypothesis about the correspondence of these distributions, so statistically both density functions come from the same population. The expert weights thus seem to be set up well and they do not influence the resulting customer satisfaction index. The P-value of the given test is close to the limit of 0.05, though. The same result came also from Cramér-von-Mises two samples test. So we can state that the distribution functions of CSI_j for weights set by experts and weights of individual customers do not differ, α=0.05. This was proofed also for all different segments we researched.

Instead of expert weights, there is the option of trying to calculate such weights, which would generate the density function as close as possible to the empirical function from Fig. 3. All possible combinations of weights with accuracy of 0.01 (total of 167,002 combinations) were tested for this purpose and the result with the highest P-value of Kolmogorov-Smirnov test was selected. The calculated weights of accommodation 0.19, boarding 0.29, spa care 0.37, leisure time activities 0.15 generate the customer satisfaction index distribution, which seems to best resemble the empirical density function of this index (see Fig. 3). **It is therefore obvious that the "expert weights" significantly underestimate the importance of boarding and overestimate the spa treatment importance on the other hand.** These data suggest that the spa company managers neglect boarding and primarily focus on the therapeutic services and accommodation. It can be explained in such a way that the customers consider the spa care and the treatment related to it as a "matter-of-fact", and on the other hand, they want to "enjoy" the hospitality services. Let us add for completeness that if we use equal weights (U – 0.25, J – 0.25, L – 0.25, K/S – 0.25) the result of Kolmogorov-Smirnov test will have P-value 0.00003. Therefore, these weights generate completely different distribution in the customer satisfaction index than the empirical distribution. **We may therefore conclude that when determining the spa guest CSI, the same importance cannot be assigned to all examined areas.**

The last possible way of deciding the weights is the utilization of the individual respondents' weights average.

From the point of view of future prosperity of the spa enterprise, it is important to have an overview of the customers' preferences according to the different types of stay and the number of stays in the past. It is obvious from Tab. 2 that we find differences in the areas of importance of individual factors influencing satisfaction between the individual segments.

Tab. 2: Computed weights of examined factors for different segments

Type of stay/number of stays	n	Computed weights (U-J-L-K/S)
spa – comprehensive	992	0.26-0.27-0.35-0.12
spa – contributory	284	0.17-0.26-0.39-0.18
spa – self-payers	4,430	0.17-0.35-0.33-0.15
wellness	1,161	0.27-0.27-0.34-0.12
hotel	672	0.26-0.29-0.31-0.14
first stay	3,505	0.23-0.25-0.38-0.14
2x – 5x	2,301	0.17-0.23-0.41-0.19
6x – 10x	1,014	0.2-0.31-0.34-0.15
10+	795	0.3-0.32-0.28-0.1

Source: own

The most numerous group of visitors from the point of view of stay, i.e. the self-paying clients, put the greatest emphasis on boarding (the weight of boarding is 0.35). Therefore, we can see the largest opportunity for improving the satisfaction index here. This is also confirmed by the increase in the weight of boarding for the visitors who have gone through five or more visits, along with the decrease of the spa treatment's importance. With the repetition of the stay the customers seem to put greater emphasis on other factors (they consider the rest as "met").

To conclude, we can state that the management of a spa company might choose the weights of experts, the computed weights or the averaged individual weights for their computation of CSI and further for CLI. However, it is important to choose one set of weights and use it in the long term so that the computed values stay comparable. It seems evident once again that the management of spa companies underestimates the importance of boarding and overestimates the importance of spa facilities for customer satisfaction. This does not say that spa facilities are not important. More likely, it means that customers are anticipating that spa facilities in a spa company are on a very high level so they put more emphasis on boarding (catering) in their decision process than expected.

4.2 Computed CSI and CLI

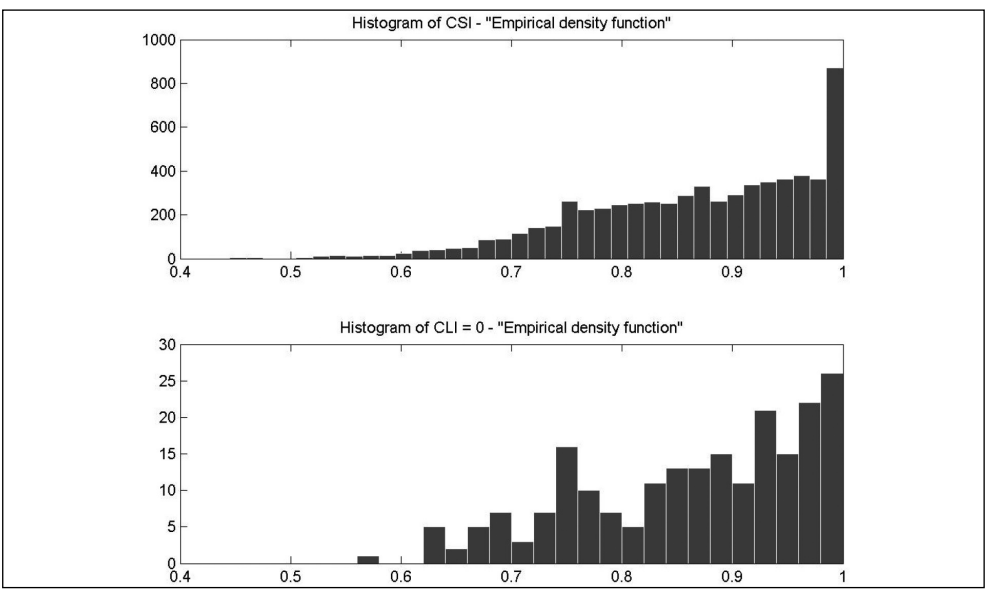
Although the difference between CSI a CLI computed with help of different weights (see Tab. 3) is not extreme, statistical differences were proofed. Overall the average difference between CSI and CLI is from 2 to 4% (CLI is always lower). It seems to be helpful to confront the results of the customer satisfaction index and the customer loyalty index. (see Fig. 4 and Tab. 4).

Tab. 3: Computed overall CSI and CLI for different weights

Index / Weights	Individual	Equal	Expert	Computed
CSI	86.52%	85.92%	86.87%	86.54%
CLI	83.82%	83.23%	84.07%	83.85%

Source: own

Fig. 4: Comparison between empirical density function of CSI and CLI=0



Source: own

The above clearly shows that spa companies should pay detailed attention to the acquired data and they should adjust their business plans according to the analysis results. We investigated the share of the customers with a zero CLI as well as the CSI value for such customers (they should have lower CSI values) based on these results. It seems to be obvious that high CSI level does not necessarily mean high level of CLI. The share of the customers with zero loyalty indices is important for the company. The overall share of such customers is 0.0462, i.e. just below 5%. This share, by different segments, is presented in Tab. 4. The decreasing share of zero value in the satisfaction index with the increasing number of visits can be evaluated positively. The company is able to maintain the loyalty of its customers. On the other hand, it is obvious and logical as well that the hotel-stay clients are the least loyal as well as the guests who visited the company for the first time. One possible explanation is that the customers look up another destination for their next stay even in the case of complete satisfaction. This is called variety seeking behaviour – e.g. Horbel and Woratschek [31].

Tab. 4: Shares of $CLI_j=0$ for different segments

Type of stay/number of stays	n	Share of $CLI_j=0$
spa – comprehensive	992	0.0441
spa – contributory	284	0.0286
spa – self-payers	4,430	0.0413
hotel	672	0.0396
wellness	1,161	0.0758
first visit	3,505	0.0645
2x – 5x	2,301	0.0358
6x – 10x	1,014	0.0282
10+	795	0.0288
Czech	4,716	0.0411
German	2,965	0.0537

Source: own

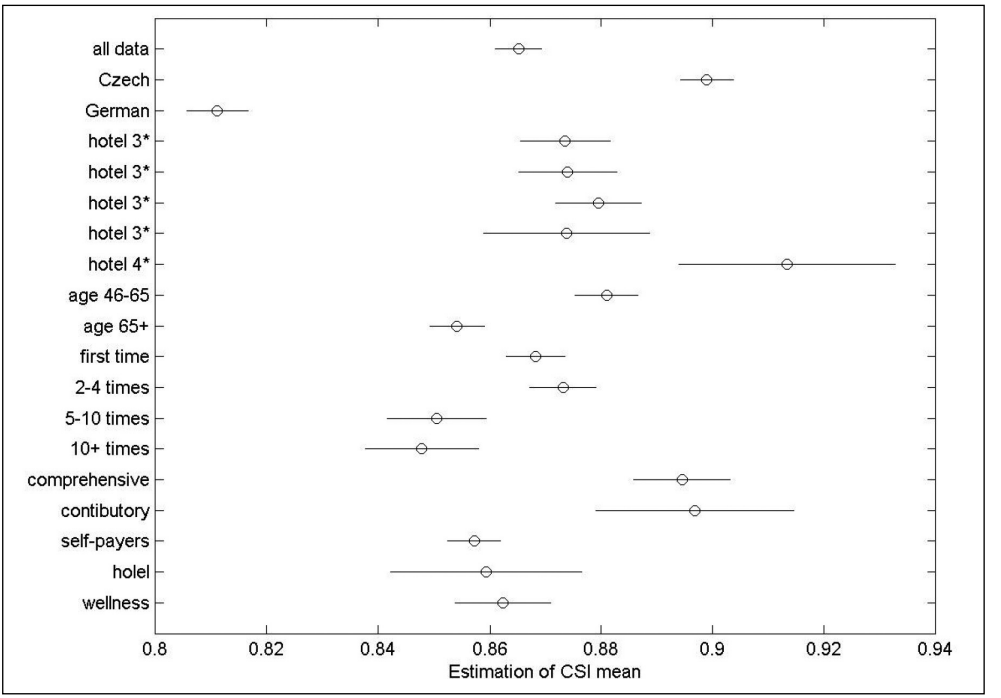
4.3 Computed CSI for different segments – ANOVA

As mentioned in the questionnaire we used several segmentation questions (e.g. type of visit, different hotels, nationality) which allow us to compute CSI for different segments and compare their values and distribution functions. The average values of CSI and CLI seemed to be different, so we proofed them with ANOVA analysis and confirmed that they are not equal for $\alpha=0.05$ (Fig. 5).

It seems to make sense – from the manager's point of view – to compare CSI for different segments separately. For our sample, the following implications were found:

The guests give different evaluation according to their nationality – the Czechs are more positive and satisfied than Germans (by about 10%). The reasons can be seen especially in the stay type (the Czech guests come usually to stays paid by the health insurance company, the German guests usually pay for the whole stay themselves so their expectations are higher); and in the number of repeated stays (the German clients come repeatedly and they know what they should expect so the tolerance field narrows down). The guests evaluate individual hotels in a different way but two groups can be established (3* hotels and 4* hotels). Some differences can be found in the evaluation based on age. The greatest demands are presented by guests over 66 years of age. This might be caused by the fact that they place significant emphasis on their health, they know what they want and what they should expect and their tolerance field is quite narrow. The guests

Fig. 5: CSI for different segments ANOVA



Source: own

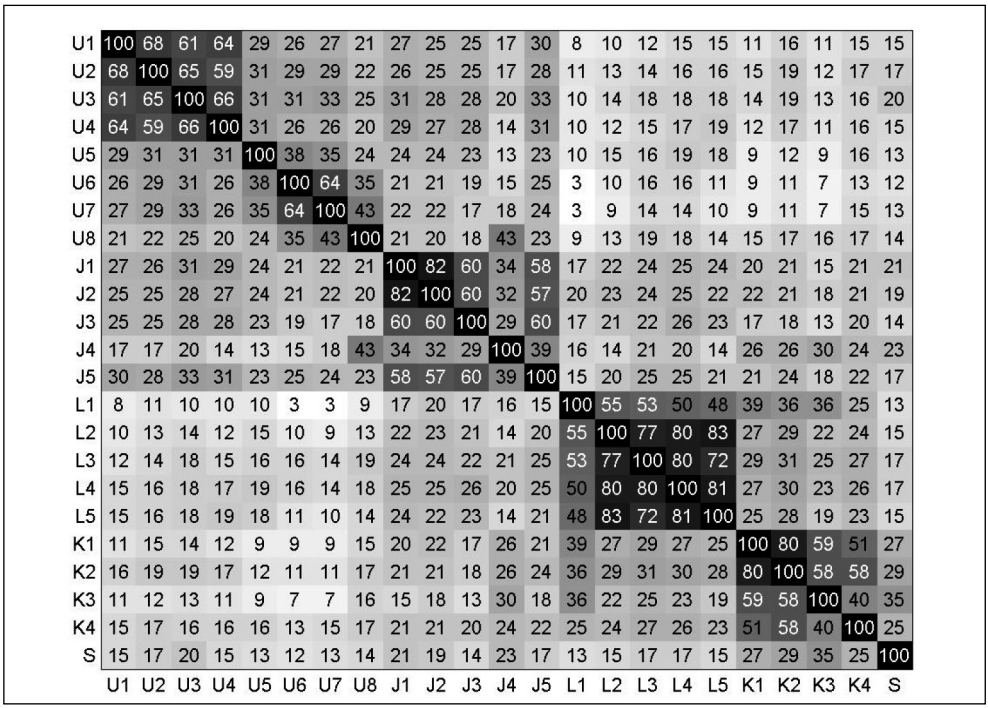
aged 46–65 who begin to experience some health problems in their productive age and any improvement of their health (even though it may not be significant) somehow increases their satisfaction, or widens their tolerance field. The other age groups evaluate in a similar way.

The narrowest satisfaction tolerance field (and thus the lowest CSI) is seen in the guest groups, who keep returning to the spa facility – again they have a clear idea and they know what to expect and they want to get it. The other groups (up to 4 visits) evaluate in a similar way. There are significant differences within the individual types of stay. This is caused by the fact that the spa establishments focus usually on provision of treatment stays so wellness stays guests, accompanying persons or hotel accommodation guests do not show such a level of satisfaction as the other guests. On the opposite end are the guests whose stay is the health insurance covers. The self-paying guests are in the average CSI values – they know what they order for their money and expect to get it – they are realists.

4.4 Validation of the Questionnaire

Besides the processing of the data acquired through the questionnaire survey, it is also necessary to carry out a "check" in the sense of reliability and validity. We will use the results of the correlation table, factors analysis and Cronbach's alpha for this purpose. The correlation table of answers to the individual questions is presented in Fig. 6. It is coloured so that the correlation coefficient equalling 1 is represented by the number 100 and the black colour, while the correlation coefficient equalling 0 is represented by 0 and the white colour. No correlation coefficient was negative.

Fig. 6: Correlation matrix for individual items of satisfaction



	U1	U2	U3	U4	U5	U6	U7	U8	J1	J2	J3	J4	J5	L1	L2	L3	L4	L5	K1	K2	K3	K4	S
U1	100	68	61	64	29	26	27	21	27	25	25	17	30	8	10	12	15	15	11	16	11	15	15
U2	68	100	65	59	31	29	29	22	26	25	25	17	28	11	13	14	16	16	15	19	12	17	17
U3	61	65	100	66	31	31	33	25	31	28	28	20	33	10	14	18	18	18	14	19	13	16	20
U4	64	59	66	100	31	26	26	20	29	27	28	14	31	10	12	15	17	19	12	17	11	16	15
U5	29	31	31	31	100	38	35	24	24	24	23	13	23	10	15	16	19	18	9	12	9	16	13
U6	26	29	31	26	38	100	64	35	21	21	19	15	25	3	10	16	16	11	9	11	7	13	12
U7	27	29	33	26	35	64	100	43	22	22	17	18	24	3	9	14	14	10	9	11	7	15	13
U8	21	22	25	20	24	35	43	100	21	20	18	43	23	9	13	19	18	14	15	17	16	17	14
J1	27	26	31	29	24	21	22	21	100	82	60	34	58	17	22	24	25	24	20	21	15	21	21
J2	25	25	28	27	24	21	22	20	82	100	60	32	57	20	23	24	25	22	22	21	18	21	19
J3	25	25	28	28	23	19	17	18	60	60	100	29	60	17	21	22	26	23	17	18	13	20	14
J4	17	17	20	14	13	15	18	43	34	32	29	100	39	16	14	21	20	14	26	26	30	24	23
J5	30	28	33	31	23	25	24	23	58	57	60	39	100	15	20	25	25	21	21	24	18	22	17
L1	8	11	10	10	10	3	3	9	17	20	17	16	15	100	55	53	50	48	39	36	36	25	13
L2	10	13	14	12	15	10	9	13	22	23	21	14	20	55	100	77	80	83	27	29	22	24	15
L3	12	14	18	15	16	16	14	19	24	24	22	21	25	53	77	100	80	72	29	31	25	27	17
L4	15	16	18	17	19	16	14	18	25	25	26	20	25	50	80	80	100	81	27	30	23	26	17
L5	15	16	18	19	18	11	10	14	24	22	23	14	21	48	83	72	81	100	25	28	19	23	15
K1	11	15	14	12	9	9	9	15	20	22	17	26	21	39	27	29	27	25	100	80	59	51	27
K2	16	19	19	17	12	11	11	17	21	21	18	26	24	36	29	31	30	28	80	100	58	58	29
K3	11	12	13	11	9	7	7	16	15	18	13	30	18	36	22	25	23	19	59	58	100	40	35
K4	15	17	16	16	16	13	15	17	21	21	20	24	22	25	24	27	26	23	51	58	40	100	25
S	15	17	20	15	13	12	13	14	21	19	14	23	17	13	15	17	17	15	27	29	35	25	100

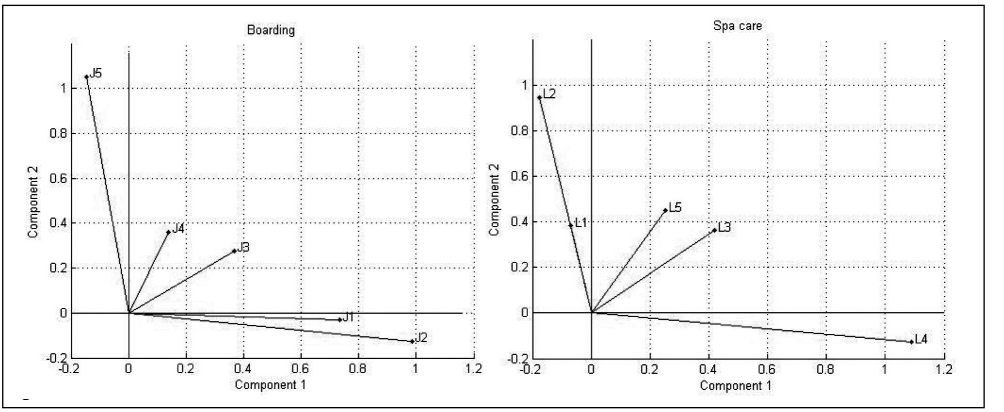
Source: own

Some “darker squares” can be identified in the figure, representing the higher correlation coefficients between the given items. The first such square is U1-U4, the second one is J1-J5, the third L1-L5 and the fourth K1-S. The value of the correlation coefficient in the first square is about 0.6, in the second one also about 0.6 (except question J4 – price), in the third it is between 0.7 and 0.8, and finally in the fourth one it is significantly lower, but still about 0.5 (except item S – aquacentre). It seems, from this point of view, that the questionnaire has been correctly structured into the individual factors (variables). The low correlation between the answers to the individual question in the sub-area “Room” show possible issues in accommodation, where some services lag behind others, e.g. cleanliness and cleaning.

A factors analysis (Fig. 7, Tab. 5) by individual areas (and sub-areas) of the questionnaire was carried out, too. The goal of the analysis was to find latent factors and use them for identification of the questions, which are “duplicated” in the questionnaire. We found solutions for two factors in three areas of the questionnaire (Tab. 5). In Fig. 7 we illustrate the areas of Boarding and Spa Care.

From the point of view of degrees of freedom, it is not possible to achieve a model with more than two factors from five questions. All three above-mentioned models have a low test P-value though and we therefore reject the zero hypothesis about the existence of two factors. Nevertheless, we can still try to interpret the results obtained. The first step is naming the latent factors. It is obvious from the graphs that the questions J1 and J2 in the area of Boarding are closest to each other. They relate to the quality and variety of meals. We can see a big loading with the first latent factor and low loading with the second factor on them. In addition, the specific variance of both questions is relatively low. We can therefore recommend that these two questions are replaced with one and the

Fig. 7: Factor analysis for Boarding and Spa Care



Source: own

Tab. 5: Factor analysis – boarding, spa care, leisure time activities

Area	Boarding (J)		Spa care (L)		Leisure time activities (K/S)	
P-value	0.0016		3.9729e-029		1.1594e-005	
Name of the first component (first latent factor)	Meals		Environment the spa care is provided in		Level of information and information provision	
Name of the second component (second latent factor)	Environment in which is eaten		The spa treatment procedures and medical procedures		Activities themselves	
Factor loadings matrix for the individual questions in the questionnaire	0.7343	-0.0298	-0.0685	0.3832	0.1817	0.8076
	0.9852	-0.1253	-0.1761	0.9454	0.5932	0.3238
	0.3669	0.2768	0.4182	0.3618	0.5440	0.1415
	0.1402	0.3607	1.0892	-0.1292	0.6184	-0.0585
	-0.1462	1.0528	0.2513	0.4483	0.3645	-0.1217
Specific Variances	0.4897		0.889		0.1184	
	0.1819		0.3312		0.2864	
	0.6505		0.4615		0.5812	
	0.7815		0.0133		0.6625	
	0.0798		0.5626		0.9117	
Cronbach's alpha for area	0.7395		0.7392		0.7372	
Cronbach's alpha after leaving the given question out	0.7395		0.7392		0.7371	
	0.7395		0.7394		0.7372	
	0.7395		0.7392		0.7371	
	0.7395		0.7392		0.7371	
	0.7395		0.7394		0.7373	

Source: own

vacant spot in the questionnaire can be filled with another price-related question that seem to be problematic, or a question regarding the waiting staff where the company can relatively easily change the quality. The Tab. 5 also depicts Cronbach's alpha for both the whole area and its value always after leaving out one question. Cronbach's alpha is for all questions within the values considered "adequate" and thus it confirms the previous result where leaving out one of the questions, J1 or J2, will not change the reliability of the questionnaire in the area of boarding.

Let us add, for completeness, that even though we were not able to find a suitable factor analysis model of the area of Accommodation nor its individual sub-areas, the reliability of this area/subarea is better than in the other areas (Cronbach's alpha is 0.8357 for the sub-area of Reception, 0.7537 for the sub-area of Room and 0.8359 for the whole Accommodation area which is considered a very good value). The validity of the questionnaire could be computed also for different customer segments individually, but this is out of scope of this paper. However, we recommend running this in the spa company.

Evaluation and Conclusion

Doing business in the spa sector is specific. The companies are influenced by the legislature about public health insurance, which is nowadays very volatile in the Czech Republic. However, the market effectiveness of the enterprise cannot be assessed only by the final market results. One of the important indicators for the company management are the customer satisfaction and loyalty indices. Especially the level of loyalty can be understood as a type of future business results prediction.

The main benefit of this research for the company should be a deeper and better identification of the customers, the knowledge of the critical points in the process of services provided and their subsequent optimization in such a way as to avoid economic loss. The importance for the company comes mostly in the area of stabilization of the customer relationship and their further development. Economic significance can be seen within the marketing and business activities – a satisfied and returning customer who will share his or her positive (as well as negative) experience with other people in their social environment (word of mouth) is the best advertisement for the least money. Nevertheless, our article showed that sometimes the marketing experts' beliefs are different from customer expectations. The results of the computations showed, that even a small difference in total number (value of index) could be statistically significant and have important marketing and business consequences.

The results suggest that the guests of the spa company under review are satisfied and loyal (the value of the calculated indices always exceeds 80%). The research was carried out only in one spa company and under the conditions prevailing in the Czech Republic (they might differ from other EU countries). However, the results show significant differences in satisfaction of different customer segments, e.g. Germans are less satisfied than Czechs are, self-payers are less satisfied than those guests on a stay, which is at least partially covered by public health insurance. Still the proposed model of spa guest satisfaction needs to be examined and tested for further use in other companies.

Following an in-depth examination, the authors of this article arrived at the conclusion that the questionnaires in use (or the data gathered) should be segmented at least according to the specific spa hotel and type of stay. The authors deem that categorisation into spa treatment and other stays would be sufficient since each of these groups has different priorities, interests and preferences. Nonetheless, such verification goes beyond the objectives of this article and the authors therefore recommend a more detailed research of the individual factors and their interrelationships.

The authors were nevertheless able to discover possible and suitable weights for the CSI (and CLI) calculation. The developed questionnaire seems to establish the spa company customers' satisfaction level in a consistent way. The premise that the spa facilities customers are rather diverse and their satisfaction differs in relation to their nationality, type of stay, age structure or repeated visits was met. The resulting values of the CSI and CLI – regardless of the way of establishing the weights – are high. However, it is obvious from the computed outputs that mere comparison of the resulting CSI and CLI is not adequate for effective management of

the customers' relationships, and that even the small differences in the resulting values can be statistically significant.

It is obvious that even with the use of a rather simply structured data we can obtain essential information about the customers and their satisfaction and loyalty. This knowledge then contributes to setting up a suitable long-term work system with the customers and their repeated visits. We proofed, that even an easy questionnaire brings useful information for business decisions and can disprove some management assumptions.

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Abstract

MEASURING CUSTOMER SATISFACTION AND LOYALTY IN SPA COMPANIES

Eliška Vildová, David Martinčík, Jan Tlučhoř, Dagmar Jakubíková

The importance of balneology for the economy of the Czech Republic has always been crucial. At a time of an unstable political environment as well as turbulent legislative and other changes, there is nothing more important than to ensure that spa guests are satisfied and that they return. Building customer loyalty and fidelity is a priority and today, it is one of the vital characteristics of modern marketing. A customer-oriented policy may become one of the keys to business success. The centre point of the issue under review is the difference between the expected and perceived level and its positioning in the tolerance zone of a particular customer. The main objective of the research is to examine the possibilities of measuring loyalty and satisfaction of customers in a spa company based on comparably simple data collection. The secondary objective is to point out the specific nature of providing spa services along with the factors that substantially influence the overall result of satisfaction and loyalty. The research results showed that managers and customers perceive the importance of satisfaction factors differently: customers put more stress on boarding than expected. As well as differences in levels of customer satisfaction and loyalty indices were proofed for different segments of customers. Therefore, the Czechs are in general more satisfied than Germans. Customers who come more often tend to be less satisfied. The guests, whose stay is at least partially covered by public health insurance, are more satisfied than self-paying customers. In general, it seems to be possible to obtain essential information about the customers and their satisfaction and loyalty from rather simply structured data gained with an easy questionnaire.

Key Words: *Customer, health care, loyalty, satisfaction, spa care.*

JEL Classification: *M31, I11.*

DOI: *10.15240/tul/001/2015-1-012*

CZECH WINE CONSUMERS: MATURING WITH AGE?

John R. Anchor, Tereza Lacinová

Introduction

Wine is a complex beverage which varies in taste, in categories and in quality measures. These factors may influence consumers' preferences. The most important factor is probably taste, although consumers usually cannot taste wine before a purchase and so other factors are important in the decision making process [5]. The motivation for wine drinking is important as well. Knowledge of situations connected with wine consumption, of what role wine plays in consumers' lifestyles and of other important motivations helps to understand the purchase decision.

There have been number of studies of the behaviour of wine drinkers [7], [8], [9], [10], [11], [32], [33], [34], [41]. The markets of Australasia, the USA and Europe have been studied in relation to consumer behaviour and the segmentation of wine consumers [7], [8], [9], [10], [11], [32], [33], [34], [41]. It has been noted that consumption patterns in the food and beverage sector are influenced by cultural factors [47]. However there has been no dedicated study in the Czech Republic. It would be interesting to see, therefore, whether or not consumer behaviour is different in this post-communist transition economy [2], [49].

The history of Czech wine growing goes back to the 3rd century, and although the 20th century saw a decline in consumption and in the number of wineries, the last twenty years have seen a rebirth of the Czech wine industry [17]. The consumption of wine accounted for 11% of the volume of alcoholic beverages consumed in the Czech Republic in 2010, while the average consumption was 19.4 litres of wine per person per year [13]. These numbers are growing slowly, possibly because of growing knowledge about wine and a decrease in prices caused by international competition [16]. The Czech Republic is a net importer of wine, importing more than half of its consumption, although the consumption of local wines has grown with time. The main competitor to wine in the Czech Republic, as an alcoholic drink, is beer. Beer is very popular in the Czech Republic, and its consumption accounted for 85% of the volume of alcoholic beverages consumed in the Czech Republic in 2010, although the consumption has been decreasing slowly in since 2005 [13], [30].

Although there have been major developments in the techniques for growing wine in the past few decades, there has been no major developments in the marketing of it [16], [41]. The wine industry seems to be struggling to find a way to become more market oriented and remains production-oriented. The wine market has long traditions; therefore it cannot be described as an innovative sector and it is agriculturally-based [9]. The problem lies in the mass-marketing strategy adopted by wine producers because wine is more part of a lifestyle than just an everyday product [34].

The main objective of this study is to identify the most important motivations for Czech consumers to drink wine and the factors involved in wine purchase since no study of this kind of Czech consumers has been undertaken. As wine consumption is growing in importance in the Czech Republic, especially in the south-eastern region of Moravia, knowledge of consumers is pivotal. The main focus of this study is to find out if there are any differences between genders and age groups, as basic segmentation factors, in relation to the consumption of wine in the Czech Republic.

1. Literature Review

The purchase process for wine is complex, since it has many dimensions which can influence decision making. There are not only thousands of brands and products, but numerous wine

styles, grape varieties, vintages, labels and wine regions. In addition, price plays a very important role in the decision making process [40], [29], [44], [45].

Wine is the "*combination of a noble grape, the creative artistry of the winemaker and the tradition of the package*" [51]. The core benefit expresses the reason why consumers may prefer wine to other alcoholic beverages and in this paper this is referred to as "the motivation to drink wine". These motivations are made tangible by using consumers' senses of sight, touch and smell, while presenting the advantages of the product, by for example using a unique design, controlling the quality of packaging or/and displaying the provenance, brand, grape variety and other factors on the bottle or in the information material.

Intangible factors, such as price, outlets where the wines are sold, or image, are used to gain competitive advantage using differentiation [51].

The importance of each of these factors has been explored in several studies of the Australian and New Zealand wine markets [12], [40], [55], [9], as well as the US wine market [41], [26]. In Europe, there have been consumer-oriented segmentation studies of the Swiss and Irish wine markets [7], [21].

The main approach to studying wine buying behaviour seems to be market segmentation. The authors of the various studies have tried to create segments of wine consumers based on different factors – for example lifestyle – which influence wine consumption [8], [29], [9]. Lifestyle is a set of values and is defined as: "patterns in which people live and spend time and money" [6]. All of the studies concerning lifestyle factors have proved the importance of them, as wine is a cultural beverage with a long history. There are social and cultural factors associated with drinking wine, which differentiate this product from many other alcoholic beverages with a shorter history.

Consumers can be segmented according to their involvement in purchase and consumption, which is generally characterized as the level of interest in an object or activity. It can be divided into product involvement, brand decision involvement and purchasing involvement [35]. A product involved consumer pays a lot of attention to buying a certain product; for example wine. When consumers are highly involved in selecting a certain brand, the behaviour is called 'brand purchasing involvement' and a consumer who is interested in purchase itself is 'purchasing involved' [7]. Consumers are often 'product involved' in the wine market, as it can be complicated to choose wine because of the existence of a large number of types and brands; and it is often important for consumers to choose the "right" wine, especially when buying it as a gift. Given the large number of brands, types and flavours, brand purchasing involvement might not be so common when buying wine [15], [35].

Purchasing involvement is an important factor in the wine market. Many wine consumers actually enjoy the journey of choosing and buying wine and the experience gained from it, as well as the product itself [41], [24]. The level at which involvement influences the purchase decision has been studied extensively [35], [33], [27].

One of the most important types of segmentation of wine consumers is that which is based on the benefits from and the motives for purchase [7]. Dubow's segmentation study pays attention to the internal motives for the consumption of wine such as: "I like the taste" or "to be stylish", while dividing consumers into five groups. To the first of them belong consumers who drank wine for the wine itself (because they like it). The second group drank wine to feel good and enjoy leisure time. The third group drank wine because they "wanted something light, natural and healthy" [7], [18]. To the fourth group belonged consumers who drank wine to be more friendly and sociable and consumers in the fifth group were characterized by the need to be stylish and distinctive.

The identification of consumers' segments is a very important thing for the wine market, as it allows the marketer to focus the campaign on certain segments which cause the campaign to have a greater effect than a non-specified and non-targeted global campaign. Although segmentation seems to be very important, researchers seem to forget another very important field of wine consumer behaviour – the search for the determinants of wine consumption [8]. Looking for these determinants can show the marketer which factor in his campaign is the most important. He can also focus his campaign on the groups with the biggest consumption.

Previous studies have often focused on finding out demographic facts about consumers – for example the fact that consumption grows

with age [12]. However lifestyle determinants have been studied less extensively [8].

Considering all these factors and putting them together to reach the final decision might incorporate a certain amount of risk and make a consumer feel insecure, uncomfortable and sceptical and may aggravate his decision by adding pressure to the situation [40], [37]. The perceived amount of risk grows with the level of formality of the situation the wine is bought for. As wine usually cannot be tasted before purchase, the consumer tends to lower the risk by focusing on the elements which he can be most sure about. The risk-reduction strategies can be summarized as follows: the consumer can choose one of the brands he knows already and can be sure of its quality (1); he can decide according to the recommendations of family or friends (2); he can buy what the salesperson recommends to him (3); he can use his own knowledge of wine (4); he can consider price as a value growing with quality (5); or he can decide according to the packaging and label (6) [3].

1.1 Demographic Determinants of Wine Consumption

The demographic determinants of wine purchase are the key factors of segmentation, as they lead to the most straightforward separation of groups which have a high probability of having a lot in common.

1.1.1 Gender

Gender may impact upon wine consumption in a number of ways. According to the Wine Market Council [54], for instance, 77% of women in the USA regularly buy wine for their households. Research in Australia found that men had slightly greater consumption than women [10]. Research in the US wine market showed that 56% of all wine consumers were women [54] which might reflect the fact that wine is "*generally perceived as a "feminine" beverage*" [50]. Australian studies prove that the strongest gender differences are in the volume of wine consumed, grape variety and wine style [10], [11]. According to a UK study, women have strong preferences for white wine since only 34% of them prefer red wine compared to 48% who prefer white wine [12]. These observations are supported by Australian results, which found that men are much less likely than women to drink white and sparkling wines [25]. Although there are clear gender differences in terms of colour related preferences in wine consumption, Robinson [46] argues that women (and men] are too heterogeneous a group to make generalizations about in this context.

1.1.2 Age

According to Lockshin et al. [35], wine consumption tends to grow with age. This can be explained by the fact that wine is a beverage with a complex taste and it takes some time for consumers to get used to it and to start recognizing the various flavours and styles. When a consumer gets used to the taste and becomes more aware of what to expect from certain kinds of wine, he can be more relaxed and buying is not so time consuming for him anymore, which can boost consumption [35].

Bruwer, Saliba and Miller [12] found out that another significant difference between age groups is the extent to which they pay attention to salespeople and waiters in the restaurant. Younger generations require a greater level of advice about wine purchase than older generations, which can be explained by the fact that knowledge about wine is gained with experience.

Wine marketers have recently taken age differences into consideration [12] while researching the differences in the volume of consumption between generations X and Y and their consuming situations [20]. According to Bruwer, Li and Reid [9], marketers should focus on consumers before the age of twenty in order to teach them to drink wine in the years when they form their consumption habits.

Hall, Binney and O'Mahony [23] conducted research on Australian wine consumers, focusing on some of their motivations to drink wine and the factors which are important in purchasing wine. They divided consumers into three age groups, while looking at the differences in their behaviour. They found that the factor 'Wine and Food Matching' (consisting of wine region, grape variety and matching wine with food) was least important to the youngest age group, while other factors like 'Price and Value' (price, discounts, value and value for money) and 'Product Attribute' (taste, type of wine) did not show significant differences between the age groups. Younger age groups showed higher preferences for sampling and seeking advice, while older consumers cared more about the quality of wine than the younger ones.

1.1.3 Knowledge

Johnson and Bastian [28] conducted a study looking at the impact of the level of expertise (knowledge) in the wine field on consumption and spending on wine. Two tests were run – a sensory and a knowledge test, which found that there was a positive correlation between the level of expertise and the amount of wine consumed. Greater expertise was correlated also with higher spending on wine.

A question of causality arises – it is not clear if consumers drink more wine because they know more about it, or if they know about it more because they drink more of it [8].

Knowledge is usually related to age as well, as complexity of wine knowledge causes learning to take some time. As wine knowledge is usually gained as a leisure activity ("hobby"), a positive correlation between age and knowledge can be assumed.

1.2 Lifestyle Determinants of Wine Purchase

Lifestyle determinants describe consumers' backgrounds and their motivations for drinking wine [48]. Research on the Swiss wine market showed that the most important motivations for drinking wine were social motivations – drinking with friends, to be sociable and socially accepted, to be distinctive, respected or to show a mature personality, in order to celebrate something or as a family tradition. However, the most important motivation was liking the taste, while not liking the taste was the most important reason why consumers did not drink wine [3].

A desire for a healthy lifestyle is another, but quite complicated, motivation. Martinez-Carrasco et al. [36], in a study of the Spanish wine market, found that health reasons for consuming wine were negatively correlated with the amount of wine consumed. Zanten [55] researched the US wine market and discovered that after finding out more about the positive impact of drinking wine, consumption increased, but only for a limited time. This means that the impact of health does not have a long-term influence on wine consumption.

1.3 Wine Characteristics Influencing Wine Purchase

The wine characteristics influencing the purchase of wine can be divided into four groups – intrinsic, extrinsic, in-store factors and situational [41], [9]. Consumers with a lower level of expertise may rely more on extrinsic factors, in comparison with more experienced consumers, who have knowledge about intrinsic factors and can use them in the decision process [34]. However, the extrinsic cues may be more important than the intrinsic ones, regardless of expertise, because of wine being consumed "*primarily for the experience with little functional utility*" [41].

The decision can change in a case when the consumer has already tasted the specific wine before [3], [32] or if it was recommended to him by friends or family [38]. The choice can be affected as well by the award of medals or prizes to a wine brand [32].

1.3.1 Intrinsic Factors

Intrinsic factors are factors associated with the wine itself, such as colour, taste and quality. Although taste is shown in many studies to be the most important reason for wine consumption [15], [7], it is hard for consumers to decide according to it, because in the typical buying situation they cannot taste the wine prior to purchase. The same problem arises with the evaluation of quality, as only the most experienced consumer can be sure of his decision. Colour is the only intrinsic cue, according to which the consumer is able to decide easily and it is one of the first factors which consumers may evaluate prior to purchase.

As the intrinsic factors are hard to evaluate for the majority of consumers, other factors need to be taken into consideration and it is usually the extrinsic set of factors which decide the purchase.

1.3.2 Extrinsic Factors

The most important extrinsic factor for wine purchase is price [42]. In situations when consumers cannot decide a purchase by considering only intrinsic factors, they often use price because of its expected positive correlation with quality.

The front and back labels of wine bottles are designed to provide the consumer with exactly the type of information he seeks and needs for a decision and to suit consumers' tastes and style. The packaging is very important for both functional and emotional reasons – it must provide the information and functions needed and must be attractive at the same time [3]. Packaging is

one of the cues which consumers use to evaluate the quality of a wine. It is interesting that there is a general preference for natural cork-closed bottles, while plastic corks are accepted neutrally and wines closed by screw caps are considered to be of lower quality [3].

The information which can be found on labels includes the brand name, vintage, grape variety, description of taste, wine style, food fitting reccomendations or production procedures [31], [53]. The back label helps consumers to decide, since the majority of them are not able to match the wine with its label description [14].

1.3.3 Geographical Context

The geographical origin of a wine is a key extrinsic factor in fluencing its consumption. The third most important extrinsic factor in Australia is the region of origin and the country of origin is one of the most important extrinsic factors in Europe [5].

1.3.4 Situational Context

The choices which consumers make do not rely only on the product itself, but they are affected also by factors in the shopping environment; for example by shelf position, advertising banners, information on the shelves, lighting, crowding and music [4], [3], [27], [32].

The purchase situation is important as well, consisting of the actual place of purchase (restaurant, supermarket, specialized shop) and the situation the wine is being bought for (just for relaxing, as a gift, for a collection) [19], [3], [41]. The factors which consumers decide on may vary in different situations [9], [1].

2. Methodology

In order to investigate which are the important influences on wine purchase, as well as the motivation for drinking wine, in the Czech Republic, a questionnaire survey was conducted. The questionnaire adopted a majority of the questions from Brunner and Siegrist's [7] study of Swiss wine consumers. As the main factors influencing wine consumption have been researched qualitatively in previous studies (mostly outside Europe), a quantitative method was chosen. An online questionnaire containing 39 questions was run for two weeks using e-mail and social networks.

The first part of the questionnaire contained general questions about wine consumption, asking consumers, for example, how much wine they drink per week, where they buy it, or about their preference for Czech or imported wines. The second part asked about their motivation to drink wine, the third about factors influencing them when they buy wine and the fourth part contained demographic questions. One of the general questions concerned subjective knowledge (consumers' perception of their knowledge about wine); while objective knowledge was not included in the study. In two weeks, 268 respondents opened the questionnaire page, and the final sample size was *n=237,* after the elimination of incomplete questionnaires.

The sample is not fully random since the respondents were contacted via e-mail and social networks. A generalization for the whole of the Czech Republic cannot be made since 72% of respondents stated that they were from the South Moravia Region (Jihomoravský kraj), one of 14 Czech regions. Only people who drink wine at least once a year were asked to complete the questionnaire.

60% of respondents were women. If age is taken into consideration, women are in the majority only in the youngest age group (18–25), while the older groups have slightly more males. This result can be explained by the authors' perception of the younger generation in the Czech Republic that wine is seen as a predominantly female beverage, or the fact that among young males, beer is the drink of choice.

To measure the agreement of consumers with various statements concerning the motivation for and factors associated with wine drinking, scale questions were used, while the possible answers were from 1 to 6, where 1 stands for "I strongly agree" and 6 for "I strongly disagree."

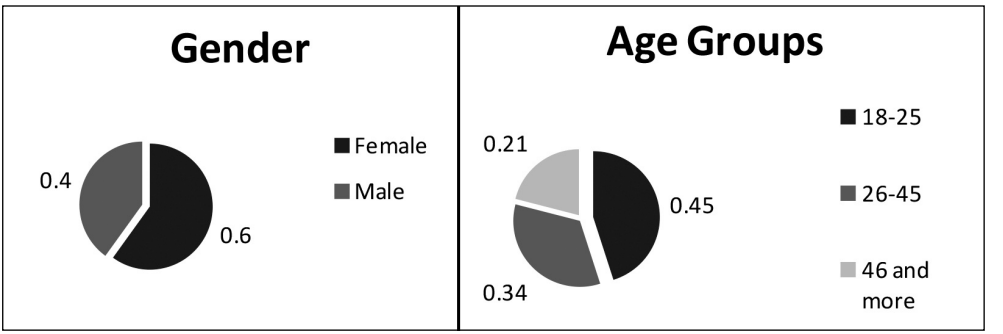
Three age groups were defined to describe the youngest generation of wine drinkers (aged 18–25), the middle generation (aged 26–45) and the oldest generation (aged 46 and more). The results from the scale questions were compared between these age groups in order to identify differences in behaviour.

Cronbach's alpha was used to test the level of reliability of the results. Spearman's rank correlation coefficient was used to compare the results of questions about motivation and the factors influencing wine purchase between age groups. A comparison of the results by gender was tested by chi-square.

3. Results and Discussion

Two sets of findings result from the primary research – an analysis of wine consumer motivation and the factors influencing the purchase of wine; and a comparison and difference analysis for age groups and gender segments. The age and gender layout of the sample can be seen in Figure 1. 60% of the sample was female, 45% were less than 25 years of age with 21% being over 46.

Fig. 1: Breakdown of sample by age and gender



Source: Questionnaire results

Tables 1 to 3 show the percentage wine drinking history of consumers, their preferred packaging and place of purchase. More than 50% of respondents had been drinking wine for 10 years or less which might indicate that there is an extensive pool of inexperienced wine drinkers.

In the case of the preferred places for wine purchase, "in a specialized shop" was most common, while "from a local wine producer" and "in a supermarket" were close behind. The most preferred packaging was glass bottles (56%) and wine drafted from barrels to plastic bottles (37%).

83% of respondents consumed five or fewer glasses of wine per week with 39% of the sample consuming one or none. 70% of the sample had a stated preference for Czech wines.

Weekly consumption and preferences concerning wine origin can be seen in Tables 4 & 5.

Consumption is significantly correlated with age at the 0.01 level and there is greater consumption of wine with increasing age. This result is in line with earlier research [35], [7]. Knowledge was significantly positively

Tab. 1: Longevity of wine drinking

How long have you been a wine drinker?	
Less than a year	6.9%
1–10 years	50.7%
11–20 years	16.7%
21–30 years	12.0%
More than 30 years	13.7%

Source: own

Tab. 2: Wine packaging preferences

Which of these do you prefer (buy most often)?	
Drafted wine	37.4%
Bottled wine (glass)	56.1%
Bottled wine (plastic)	2.6%
Wine in carton boxes	0.9%
Other	3.0%

Source: own

Tab. 3: Wine purchasing location

Where do you usually buy wines? (multi-choice question)	
In a specialised shop	33.7%
In a local supermarket	23.5%
In a corner-shop	6.0%
From a local wine producer	24.7%
Other	7.0%

Source: own

Tab. 4: Weekly wine consumption

How many glasses (0.21) of wine do you drink per week?	
0–1	93
2–5	104
6–10	28
11–15	7
16 and more	6

Source: own

Tab. 5: Provenance preference

Do you prefer Czech or foreign wine?	
I always prefer Czech wines	78
I usually prefer Czech wines	89
Without a preference	56
I usually prefer foreign wines	13
I always prefer foreign wines	1

Source: own

correlated with consumption at the 0.01 level as well. Earlier studies have identified this feature [8], [41]. Growing consumption with age and knowledge is considered to be interrelated, since with growing age and knowledge the consumer is more able to savour complex flavours and to understand better the factors which differentiate wines.

3.1 Motivations to Drink Wine

The strongest motivation for drinking wine found in this study was taste, which is in line with the results of earlier studies [12], [52], [5].

The second biggest motivation to drink wine was "to celebrate something", which is understandable as wine, especially sparkling wine, which is known as sec or demi sec, is consumed often as a festive beverage in the Czech Republic.

Wine drinking in Switzerland is associated with celebrations and festive occasions [7]. This study had similar results for the third most important motivation found in this study – the belief that wine belongs with a nice meal.

Factors such as "I drink wine to be distinctive" or "to be socially accepted" were the most negatively evaluated questions. Cronbach's alpha was above 0.7 in all cases, which indicates an acceptable level of reliability. The results for the questions concerning motivation to drink wine can be seen in Table 6.

Differences between age groups were tested by Spearman's rank correlation coefficient, while differences between genders were tested by chi-square.

Tab. 6: Motivations to drink wine – Means, Cronbach's α and Spearman's coefficient

I drink wine.....	Mean	Cronbach's α	Spearman's coefficent
Because I love the taste	1.7722	0.767	-.004
To celebrate something	2.1308	0.765	-.005
Because a glass of wine belongs to a nice meal	3.0886	0.763	-.186
Because I consider wine healthy	3.3966	0.762	-.188
Because it is a tradition in my family	4.2194	0.754	-.061
To be sociable	4.5738	0.752	-.144
Because drinking wine testifies to a mature personality	5.0127	0.749	-.013
To be respected	5.1561	0.752	-.140
To be socially accepted	5.2278	0.748	-.032
To be distinctive	5.4388	0.752	-.009

Note: *Correlation is signifiant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). The questions are ordered according to the mean (that is according to the importance of the motivation of the respondents) from the most important to the least important.

Source: own

There were no significant differences between genders; however, the biggest difference was found in the case of the answer "to be distinctive".

In the case of motivations to drink wine, two variables were found to be correlated with age at the 0.05 level, while two more variables were correlated with age at the 0.01 level. The strongest correlation with age was the motivation "because I consider wine healthy," where the importance of the factor grew with age. The second strongest correlation was with "because a glass of wine belongs to a nice meal", while its importance grew with age as well. Other correlations were between age and the variables "to be respected" and "to be sociable", while the importance of these factors decreased with age.

3.2 Factors Important in Wine Purchase

The most important choice factor was the grape variety. A similar result has been found for the main segment of US wine consumers [32], [7], [8]. The information on the label is a key factor since it contains a lot of information, e.g. the provenance, which was the second most important factor in choosing wine. This result may be connected to a very strong inclination to buy Czech wines since more than 70% of respondents answered that they more commonly buy Czech wines rather than imports. Cronbach's alpha was around 0.76–0.77 in all cases, which indicated an acceptable level of reliability. The results of the questions concerning the factors which influence wine purchase can be seen in Table 7.

Tab. 7: Factors influencing wine purchase – Means, Cronbach's α and Spearman's

When buying wine, I pay attention to	Mean	Cronbach's α	Spearman's coefficent
Grape variety	1.9662	.765	-.053
All the infomation on the label	2.0633	.770	-.192
Producer/Brand	2.2363	.768	-.136
Provenance	2.3207	.763	-.141
The best possible price/quality ratio	2.3671	.768	.019
Recommendations of friends and acquaintances	2.6034	.768	.039
Wine from local producers	2.8312	.770	-.065
Vintage	3.0549	.764	-.191
A well-established producer	3.3080	.769	-.079
Recommendations of salesperson	3.8903	.768	.182
The design of the bottle and the label	4.1392	.760	.254
Bargains and special offers	4.1477	.759	.094
I nearly always choose one of the lowest priced wines	4.9409	.766	.220
Advertising	5.0591	.762	.070

Note: *Correlation is signifiant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). The questions are ordered according to the mean (that is according to the importance of the motivation of the respondents) from the most important to the least important.

Source: own

Several strong correlations were found between age groups and the factors influencing wine purchase. The strongest correlation was with "the design of the bottle and the label" where the youngest consumers reported that they were influenced by these factors much more than older ones. Other factors with a significant correlation, such as the label, vintage, provenance and brand/producer, increase in importance with age. This can be explained by the fact that making decisions according to these factors might be too complicated for inexperienced consumers, but with age, consumers usually gain knowledge and are more able to evaluate them.

In the case of "I nearly always choose one of the lowest priced wines" and "recommendations of salesperson", the trend is diverse – their importance decreases with age, which can be explained by the lower disposable income of the youngest consumers and by their greater uncertainty when buying wine (and so the need to ask for advice).

There are major differences between generations in the Czech Republic in the importance of the factors which they pay attention to when buying wine. Older consumers seem to be more interested in the factors which require a certain level of knowledge to be

understood, as there are many combinations of label information with vintage and countries of origin vineries from thousands of producers. As younger consumers generally have a lower level of knowledge about wine, it is hard for them to decide according to those factors and they look at other, less complex clues, such as design of the bottle, or they seek advice from the salesperson. The greater importance of choosing the lowest priced wines for younger generations is understandable, given that disposable income usually increases with age.

Therefore it seems that younger consumers drink wine more for social reasons, while older consumers are more likely to consume alone and at home and to focus on the internal aspect of wine – it being healthy and a part of a meal.

Conclusions

The aim of this study was to explore the differences in wine buying behaviour between genders and age groups, as well as their motivations for drinking wine, in the Czech Republic. The other factors researched were knowledge about wine and its relationship to consumption and to find out which factors and motivations are the most important for Czech consumers.

A review of the literature identified some of the likely main factors in purchasing decisions. These were included in a questionnaire survey which was conducted in the Czech Republic. There were 237 usable responses, mainly from the South Moravia Region (Jihomoravský kraj).

The taste of wine and the availability of a special, celebratory, occasion were the strongest influences upon purchase decisions. Gender differences were not statistically significant discriminators of motivation. It was found that the younger age groups were motivated to a greater extent by social aspects, while those of more mature years showed a tendency to drink wine because it is healthy and with a meal.

The most important factor in choosing wine was the grape variety. Major differences were found between age groups, as older consumers focused significantly on more complex factors such as label, vintage, provenance, and the identity of the producer. Younger consumers reported a stronger interest in looking at design and seeking advice. This could be explained by the low level of expertise of young consumers, who tend to make the decision on the basis of less complicated factors, which can be due to the fact that experience is usually gained with age. Another explanation could be that younger consumers may differ in their level of involvement in the purchase, as they might be interested only in the drinking of wine and not in the purchase process. That could be explained by the different lifestyles of the younger generation. Therefore, younger consumers could be looking for ways to make the decision as easy as possible and therefore they choose factors which take little time to evaluate.

Consumption grew with both age and knowledge. Men reported higher levels of consumption than women. Consumers showed a clear preference for Czech wines, rather than imports. Such a strong inclination for own wine seems to be less common in other countries and could be used in the marketing of Czech wines. The reasons for this inclination could be the focus of future studies, particularly in Central Europe. It may be that the Czech Republic has entered a phase of its post communist development which leads wine consumers to want to explore home grown products more than imports from established western producers.

The study was limited mainly by the sample, as it was not random. The only generalization possible can be drawn for the region of origin of the majority of respondents, although the sample was quite big. Future research could test these results in other wine consuming regions of the Czech Republic.

This study has important implications for marketers, as age is shown to be an important segmentation factor in the Czech wine market. Wine marketing campaigns should focus on different ways of targeting different age groups. Older consumers are more sophisticated in their purchasing decisions; however there may be the potential to wean younger consumers from beer and other products via a targeted marketing campaign.

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Abstract

CZECH WINE CONSUMERS: MATURING WITH AGE?

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The purpose of this study is to identify the most important motivations for drinking wine and the factors influencing wine purchase in the Czech Republic and to ascertain if there are significant differences between genders and age groups. An online survey was conducted, using e-mail and social networks, of wine consumers in one of the 14 regions of the Czech Republic. This resulted in a sample of n=237. Spearman's correlation test was conducted to find correlations between wine consumption and age and the chi-square test for differences between genders. Four motivations were found to be significantly correlated with age – to be sociable, to be respected, because wine is considered healthy and because it belongs with a nice meal, as well as seven factors affecting wine purchase – label, provenance, brand/producer, vintage, design of the bottle, recommendations of salesperson and a preference for the lowest priced wines. As the majority of respondents came from one of the 14 Czech regions, generalizations for the whole Czech Republic cannot be made. It is recommended that future work should include more complex segmentation. This paper contributes to the literature by exploring the Czech wine market, where very little research has been conducted so far, as well as by exploring the influence of age on the motivation for wine consumption.

Key Words: *Wine consumption, consumer behaviour, Czech Republic.*

JEL Classiffication: *M31.*

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