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Obsah+Contents

Ekonomie
Economics

Ekonomika a management
Business Administration and Management

Marketing a obchod
Marketing & Trade

Informační management
Information Management

Různé

INTEGRATIVE MODEL FOR EVALUATION OF DEVELOPMENT POTENTIALS OF REGIONS AND ITS APPLICATION ON AN EXAMPLE OF THE CZECH REPUBLIC

Milan Viturka

Introduction

The regional development became a frequent topic in the Czech Republic mainly after the country entered the EU. Logically, this has led to a growing demand for new theoretical and methodological approaches of regional research, also as a reaction to the unilateral approaches existing at the time defining regional policy in terms of a mix of practical tasks in Central and Eastern European countries [1]. This development represents a new challenge for regional sciences, which include especially regional economy, economic geography and spatial planning [15]. It is necessary to note that as far as direct links of the theory of regional development to general economic theory are concerned, this is a rather complicated matter. The main reason is the fact that the mainstream economic theory ignores the spatial aspect (to say nothing of the degree of information capacity of economic theories which use a gnoseological framework of closed physical systems although they relate to open social systems). The solution of this problem can be considered as a significant methodological contribution of the theory of regional development.

The above mentioned developments led to the creation of the presented model aiming for business oriented interpretation of the principles of developmental and hierarchical differentiation of social systems [11]. Their effect is in agreement with the general theory of systems connected with numerous feedbacks which provide self-control of social systems in real conditions of imperfect competition. The developmental differentiation of social systems determines the socioeconomic organisation of the society, and its main demonstration is natural selection based on competition, which in combination with purposeful cooperation of economic entities ensures optimum use of limited sources. This differentiation is closely related to hierarchical differentiation of social systems resulting in socio-geographical organisation of the society. However, this relationship is modified by strong inertia of hierarchical structures therefore the effect of both principles is not always straightforward. In this context the following principles have been applied when creating the model:

- evaluate development potentials of regions in an integrative way – from factual (integration of economic, social and environmental factors) as well as spatial (integration of territorial structures) perspectives;
- preference for the bottom-up approach following the line microregion – mesoregion – macroregion with an emphasis on the specification of the main integration processes;
- evaluate the information capacity of the model by means of testing relevant hypotheses with positive impacts on usage in a regional policy and the business sector.

1. The Theoretical Background

Location theories are the most inspiring out of supply-oriented neoclassical theories of economic growth as regards the links of the presented model to theories of regional development. Their basic premise is that a limited spatial mobility of production sources determines the

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creation of territory-specific economic structures (including the creation of external savings), and the aim of these theories is to find the main factors determining the location of economic activities. According to Massey [20] one can distinguish four basic directions: location decision process of companies, mutual interdependencies of location decisions, behavioural concept of location and a synthesis of economy spatial distribution, which was dealt with from the perspective of the central-place theory [14]. Further inspiration was obtained from endogenous growth theories responding to the fact that original neoclassical theories cannot explain a long-term production growth. Endogenous theories emphasise the internalisation of the significant factors of economic growth, which were within the widely known Solow's neoclassical growth model considered as the exogenous factor "technology" – it is a non-measurable residual factor to which the differences between the real GDP growth and the corresponding contribution of basic production factors are allotted [28]. Correspondingly, they are characterised by a spill-over of economic effects connected with the creation of positive externalities (capital returns then have, ceteris paribus, growing character). Most often, two examples of endogenous models are mentioned: models oriented towards an accumulation of human capital [18] and models oriented towards an accumulation of knowledge capital [27]. In this context, we also have to mention the new trade theory [17] and the micro-economic theory of competitiveness with the well-known diamond model [26]. The other main group of regional theories contains demand-oriented theories emphasizing the determining effect of demand on economic growth, which is in contrast to neoclassical theories generally considered uneven. Out of these "core-periphery theories" the most inspirational are especially the growth pole theory [24], the theory of cumulative causation [22] and the theory of uneven development [13]. The first theory points out the key role of development poles for economic growth. The other two theories significantly contributed to the clarification of the cumulative mechanism of origination of disparities in the regional development, including the diffusion of positive and negative effects. According to Myrdal, this process has three basic stages: selection of successful regions, polarization, and integration. Other significant groups of inspirational theories are institution-oriented theories, mainly the theory of learning regions [19] and time-geography [10].

Generally speaking, the main inspiration of the above-mentioned theories for the presented model are modelling of the significance of agglomeration economies, spatial diffusion of socioeconomic phenomena (including links to the concept of cluster, elaborated by Porter) and knowledge capital in the regional development. Also the concept of regional competitiveness needs to be mentioned as well as the professional discourse on the developmental role of institutional factors emphasizing the concept of regions as networks of contacts and relationships. The term of regional competitiveness, which is currently being intensively discussed, can be understood as "the ability of regions to generate, while being exposed to external competition, relatively high income and employment levels" [8]. Its maintenance is considered a major condition for the meeting of rising material and nonmaterial needs of current and future generations while adhering on to the ecological definition of sustainable development as the development which meets the present needs without compromising the fulfilment of future needs [2]. In this context we can state that the used approach respects new tendencies in the development of economic thinking emphasizing a holistic understanding of the economic development as an integral part of the complex process of social evolution.

Considering the large amount of regional theories, it is not surprising that their application within regional policy has become eclectic. As regards the still topical question whether the regional development is dominated by the processes of convergence or divergence, we are of the opinion that a permanent dominance of one of these processes would contradict the general theory of systems as it would lead to a gradual degradation of systems. In the real world, both processes overlap – processing industries located in non-metropolitan regions are considered bearers of the convergence, higher market services concentrated in metropolitan regions are considered bearers of the divergence [7].

2. Model Description and the Results of Its Application to the Czech Republic

Based on the theory and accepted principles, the main components of the model are business environment quality (BEQ), innovation potential of companies (IPC) and use of human resources (UHR). The essence of the model can be described as follows. An improvement of BEQ stimulates the development of business activities with positive impacts on IPC and UHR. Thus, the synergic effects that are generated enhance territorial integration and increase development potential and regional competitiveness, which creates the basic prerequisites for sustainable regional development. The developmental tendencies of regions then depend on whether the region gains or loses competitive advantages compared with other regions (these tendencies can also be influenced by random factors, i.e. the model is non-deterministic). The competitiveness of companies plays a crucial role in this; however, its relationship to the competitiveness of regions is not completely straightforward (e.g. reduction of staff in companies reduces the level of the UHR). We chose the microregional level as the level to be used for the primary evaluation of development potentials. In the Czech Republic this level is represented by administrative districts MEC – municipalities with extended competence of the 3rd degree. These are 205 territorial units in total with an average number of 45 thousand of inhabitants (this level does not include Prague). The following mesoregional (hereinafter regional) level is represented by 14 regions of NUTS 3 level including Prague, with the current average number of about 750 thousand of inhabitants.

The central position of the BEQ is based on the fact that it represents an aggregate result of a long-term accumulation of various influences generated by activities of entrepreneurial and non-entrepreneurial entities. The own methodology of BEQ assessment is based on territorially bound factors reflecting investment or development preferences of the companies operating in the processing industry and higher market services (information and communication; financial and insurance activities; real estate activities, professional, scientific and technical activities; administrative and support service activities), which are considered the "engines" of economic development. Both of these sectors have similar positions in the Czech economy (the not included industries provide material conditions for the society to operate and their reproduction, distribution and exchange of products and lower market services and public services; location of the remaining industries is determined by specific nature-conditioned factors – the proportion of these industries in the total production of developed economies is substantially lower than that of the development-bearing industries). This approach has been chosen for its good usability for regional comparisons of the corresponding supply. It is necessary to note that besides the field classification an individual location is influenced by many factors which are hard to quantify (companies assess the existing offer using a mixture of general factors and their own criteria).

Primary information necessary for the selection of BEQ factors and establishment of their significance levels has been gained from an extensive international survey [23] together with the results of other studies [16], [9]. The mentioned survey was conducted by means of questionnaires in which big companies listed their preferences pertaining to the choice of factors and their significance for location decisions. Due to some drawbacks of these surveys and studies, the final selection and evaluation of factors were performed using the results of other analyses as well. These were mainly the results of own application of a factor analysis focusing on the spatial relations demonstrated in foreign investments including property acquisitions and analyses of opinions held by significant foreign companies operating in the Czech Republic [25]. Based on this procedure, 16 factors in total were identified with empirically provable major significance for investment decisions of companies and their final significance levels were calculated as an average from both selected sectors. These factors are divided into sixth groups. The group of business factors contains factors of proximity to markets (3 primary indicators), concentration of significant firms (2); supporting services (3) and presence of foreign firms (2); the group of labour factors contains the factors of availability (4), quality (8) and flexibility of labour forces (2); the group of infrastructure factors contains factors of road and railway quality (12), information and communication technology (6) and proximity to international airport (3); the group of local factors contains factors of entrepreneurial and knowledge base (24) and assistance of public administration (11); the group of price factors contains factors of real estate price (5) and price of labour (3); the group of environmental factors contains factors of urban and natural attractiveness (9) and environmental quality (8). The essential issue is then the search for suitable indicators enabling us to confront the companies' preferences with regions' supply – within our research 20 thousand records were collected and analysed from the perspective of their information value and statistical distribution.

The system for BEQ evaluation is based on five generalised classification degrees (from the excellent – 1st degree to the unfavourable 5th degree). The initial microregional evaluation is based on weighted sums of individual values of the factors respecting the results of analyses of primary indicators and interpreted by means of the created system of classification. Regional values of the BEQ were obtained by aggregating microregional values weighted by the number of inhabitants. In agreement with the main strategic objective of economic development of the Czech Republic, which is generally considered to be the transfer to knowledge economy, we used weights B for the evaluation of the significance of the factors as these correspond to an intensive type of economic development driven by innovation (see Tab. 1, which also shows weights A corresponding to the existing type of development driven by investments). When establishing weights B the preferences of economic entities active in high-tech and medium-tech industries and preferences of economic entities active in other industries considered equal (this ratio corresponds to the current situation in one of the most technologically advanced countries i.e. Germany). The corresponding changes in the regional values which appeared due to the fact we used weights B did not exceed 2%, which points to an initial stage of the development of knowledge economy in the Czech Republic. Generally, the approach used thus increases the timeless significance of BEQ assessment. The used procedure can be expressed by the following formula:

$$T = \sum_{i=1}^{n} F_v \times F_w \qquad (1)$$

Where:
T = total value of BEQ
F_v = values of partial factors
F_w = weights of partial factors.

The results show that all regional centres have above average levels of BEQ (see Tab. 2). This threshold can be understood as the basic criterion for the identification of development poles with the determining effect on the development potential of microregions and regions. From the other criteria we can mention the performance of higher administrative and service functions and the above-average level of IPC. In this line, we defined categories of development poles of national significance and development poles of supranational significance comprising the most significant development poles with BEQ values 1.5 (rounded) and lower – in correspondence, Prague was identified as the main development pole of supranational significance and Brno as a secondary development pole of supranational significance (in particular in the field of exhibition industry and R&D). Eight other microregions, located almost exclusively in the Středočeský region, manifest values of BEQ slightly above average (see Fig. 1). This can be explained by the stimulating effect of Prague resulting in an origination of a highly integrated Prague metropolitan region of European significance. The microregion of M. Boleslav (centre of car industry, whose cooperation links affect not only the Středočeský region, but also the neighbouring regions) has classified as the only centre without higher administrative functions among development poles of national significance. The other microregion centres with BEQ values below average (together with the seven microregions with BEQ above average which do not achieve the significance position of development poles) were classified as centres significant for development. These centres, which only perform lower administrative functions, are divided into four levels: centres with highly favourable (7 centres), favourable (101), less favourable (82) and unfavourable (2) BEQ.

Tab. 1: BEQ factors and their importance

Factors [a]	Factors groups	Weight A	Weight B	Ratio B/A[b]
Most important factors:		***44***	***48***	▲
Entrepreneurial and knowledge base	Local factors	9	11	▲
Availability of labour forces	Labour factors	10	10	○
Proximity to markets	Business factors	9	9	○
Concentration of significant companies	Business factors	9	9	○
Quality of labour forces	Labour factors	7	9	▲
Medium important factors:		***37***	***35***	▼
Real estate price	Price factors	7	7	○
Road and railway quality	Infrastructure factors	8	6	▼
Price of labour	Price factors	6	6	○
Information and communication technology	Infrastructure factors	6	6	○
Supporting services	Business factors	6	5	▼
Urban and natural attractiveness	Environmental factors	4	5	▲
Less important factors:		***19***	***17***	▼
Presence of foreign companies	Business factors	5	4	▼
Environmental quality	Environmental factors	3	4	▲
Assistance of public administration	Local factors	4	3	▼
Proximity of international airport	Infrastructure factors	4	3	▼
Flexibility of labour forces	Labour factors	3	3	○

a Basic content specification of factors (the auxiliary criteria are not included):
Proximity to markets – availability of foreign and Czech regions weighted by size of GDP/PPS, expressed by gravity model within limits of effective distance in truck transport determined by labour regulations and quality of roads.
Concentration of significant companies – location of large companies.
Supporting services – proportion of economic entities classified as L, M and N by NACE.
Presence of foreign companies – proportion of companies in foreign ownership.
Availability of labour forces – aggregated data about the number of economically active inhabitants.
Quality of labour forces – aggregated data about the degree of education of workers in industry (manual and non-manual components) and higher market services (non-manual component).
Flexibility of labour forces – expressed based on the highest level of flexibility (degree of entrepreneurship).
Road and railway quality – weighted assessment of the level of connection of regions to motorways and roads of 1st class and significant railways.
Information and communication technology – perception of computer literacy of inhabitants based on data about the rate of PC availability and the dynamics of its development.
Proximity of international airport – location of airports and their accessibility within the limits of distance.
Entrepreneurial and knowledge base – the number of industrial zones, science parks, business incubators, universities and research institutions within a region (including assessment of quality).
Assistance of public administration – assessment of quality of territorial administration from the perspective of the support for development of business activities.
Real estate price – aggregated data about average prices of lands in industrial zones and average prices of net annual rent for offices.
Price of labour – aggregated data about average gross wages in industry and market services.
Urban and natural attractiveness – aggregated expression of attractiveness within the context of a region’s significance for tourism.
Environmental quality – aggregated expression based on data about air quality mainly.

b Ratio B/A – ▲ higher weight of B, ○ balanced weights, ▼ lower weight of B.

Source: Authors’ research.

Tab. 2: Aggregate BEQ values

Region	Centre	Total BEQ	Centre BEQ	Population in thous.[a]	GDP per capita In thous. Euro[a]
Praha	Praha	1.16	1.16	1,212	26.5
Středočeský	Praha [b]	2.65	2.03 [c]	1,202	11.6
Jihočeský	Č. Budějovice	2.86	1.98	633	10.6
Plzeňský	Plzeň	2.77	1.68	561	11.3
Karlovarský	K. Vary	2.99	2.31	307	8.8
Ústecký	Ústí n. L.	3.05	2.35	831	9.8
Liberecký	Liberec	2.79	2.02	434	9.5
Královéhradecký	H. Králové	2.86	1.88	552	10.5
Pardubický	Pardubice	2.94	1.81	511	10.3
Vysočina	Jihlava	3.02	2.16	514	10.4
Jihomoravský	Brno	2.78	1.54	1,141	11.3
Olomoucký	Olomouc	3.19	2.37	642	9.1
Zlínský	Zlín	3.29	2.43	591	10.1
Moravskoslezský	Ostrava	3.27	2.33	1,250	10.4
Czech Republic	***Prague***	***2.75***	***1.16***	***10,381***	***12.3***

a Values for 2007.
b Prague is seat of the regional office.
c The value is related to M. Boleslav.

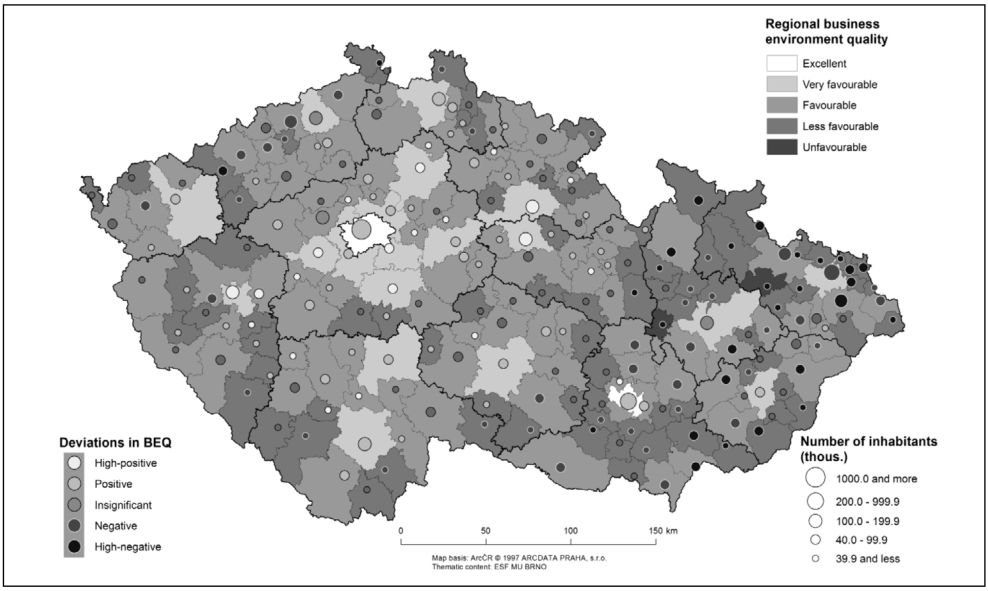
Source: Authors' research, Czech Statistical Office.

As regards the regional level, except for the specific Prague region, the differences among regions are not very considerable – the BEQ values range from +11 to -10% from the weighted average of these regions. Therefore, we have reached a strategically important conclusion that the issue of disparities predominantly concerns the relation between Prague, or Prague together with the Středočeský region (in the case of this "natural" region, the combined BEQ value would be around 1.90), and remaining regions. That is why the differences between development poles seem to be more important (gateway effect). It should also be added that the BEQ value changes assessed using weights A between the examined periods 2001/2002 and 2006/2008 ranged only within +5% for Prague and -6% for the Olomoucký region. The spatial distribution of BEQ values displays the following regularities or basic tendencies:

- macroregional level – deterioration of regional BEQ values in the direction from the west to the east (this corresponds to a similar tendency of GDP per capita, which is observed in all countries of the Visegrád Group: Czech Republic, Slovakia, Poland, Hungary);
- regional level – deterioration of microregional BEQ values in the direction to regional boundaries in the sense of core-periphery theories (selectively modified by the historical development of urbanization);
- macroregional and regional levels – creation of a system of development axes of national and regional significance with comparatively higher BEQ in relation to the diffusion of positive effects (including the stimulation of business clusters creation), induced by development poles.

The listed regularities reflect general principles of spatial organization of social systems, which have a logical consequence in the form of disparities in regional development. Reduction of these disparities is the main aim of a traditional regional policy. It is necessary to have a verified methodology for a correct identification of disparities (in the practice intuitive or unilaterally oriented methods prevail). The results obtained allow us to accept the following conclusion: territorial disparities in regional development can be divided into the "inherited" ones, that is disparities determined by the hierarchical position of regions – their regulation would be contrary to the strong inertia of hierarchical structures and therefore inefficient – and "created" ones, that is disparities determined by the character of economic development of regions – their regulation is considered a socially justifiable application of the solidarity principle [29].

Fig. 1: Regional business environment quality (BEQ) according to the MEC regions



Source: Author's research.

The common explanation framework of the following model components i.e. IPC and UHR is formed by processes of regions' adaptation to global and regional tendencies in the development of economy, whose key factors are the ability to create innovation and maintain employment. Both the components are characterized by strong linear and nonlinear links to the development of the entrepreneurial sector in the system context of its structural adaptation. Due to certain troubles with availability of regional data, the methodological approach based on selected indicators of explored processes was chosen for the interpretation of these components. The regional evaluation of IPC component is based on eight representative indicators (mainly related to the share of innovation companies and types of innovation activities, further to expenditures and employment rate in the field of R&D, and also the space distribution of the most significant innovation companies) and UHR component on five representative indicators (mainly microregional series of unemployment and vacancy indicators and economic sensitivity indicators). However, it is necessary to note that a number of external factors affecting the development of both of these components are already comprised within BEQ factors.

The essential significance of the IPC component follows from the fact that the creation, adoption and transfer of innovation are generally considered, together with the development of science and research, the main processes affecting the existent and mainly the future competitiveness of regions and the corresponding indicators provide basic information on the development of knowledge economy. From a theoretical perspective, we have to note that the creation of innovation disrupts the process of automatic balancing of the market which is one of basic postulates of the neoclassical theory. To evaluate the component we used the following information sources: survey of the Czech Statistical Office on innovations in the entrepreneurial sector in 2004–2006 – about 8,500 companies included [5], survey on science and research in 2004–2006 [4] – all companies performing R&D included, and our own survey based on the database of the Association for Innovative Entrepreneurship and annual reports of companies, with data harmonized as of the end of 2007 – about 1,500 companies included. The advantage of surveys on innovations is their standardization within the entire EU by means of the harmonized CIS questionnaire. The disadvantages include a degree of subjectivity, and in the case of the Czech Republic also the fact that the survey from 2004–2006 is the last one by now which provides information up to the level of NUTS 3 regions. A strategically important finding is the fact that in contrast to non-innovative companies, technically innovative ones penetrate international markets much more easily (the corresponding ratio at international, national and regional markets was 0.5 : 1 : 0.6 for the former in contrast to 0.3 : 0.8 : 1 for the latter), and innovation capabilities increase with the size of companies and their internationalization. It follows the dominating orientation of Czech companies towards innovations of lower levels, as proved by the fact that only a third of expenditures on technical innovations go to R&D (the proportion of technologically demanding

Tab. 3: Selected indicators of IPC

Region	Share of innovative companies (%)	Share of companies with product innovation (%)	Share of companies with process innovation (%)	Company expenditure on R&D/GDP	Employees of companies in R&D/TNE [a]
Praha	30.9	*20.3*	*23.4*	1.04	1.34
Středočeský	27.2	*17.9*	*20.7*	2.21	0.69
Jihočeský	27.9	*18.3*	*20.8*	0.47	0.28
Plzeňský	28.2	*18.9*	*22.2*	0.52	0.36
Karlovarský	20.5	*14.0*	*17.1*	0.11	0.15
Ústecký	26.5	*16.6*	*20.5*	0.25	0.19
Liberecký	28.5	*17.1*	*24.3*	0.97	0.54
Královéhradecký	26.2	*17.2*	*21.3*	0.44	0.42
Pardubický	25.7	*20.0*	*19.2*	1.18	0.84
Vysočina	23.5	*13.7*	*19.3*	0.45	0.32
Jihomoravský	31.5	*21.9*	*23.3*	0.73	0.69
Olomoucký	29.4	*17.4*	*23.7*	0.61	0.49
Zlínský	30.2	*21.1*	*25.3*	0.88	0.61
Moravskoslezský	23.9	*15.2*	*20.0*	0.58	0.34
Czech Republic	***28.1***	***18.5***	***21.9***	***0.83***	***0.59***

[a] TNE – total number of employees.

Source: Czech Statistical Office.

industry and services in the Czech Republic is about 20%). This is also connected to a relatively low level of the exertion of intellectual property rights – however, using the indicator of the number of patents per capita for a regional comparison of Visegrád countries is disputable as most transnational corporations (TNC) file patents in the place of their headquarters, not in the place where the invention was made.

According to the evaluation results (see Tab. 3), the highest degree of the component is reached by Prague, followed by the Středočeský region and the Jihomoravský region – this is also reflected by their high migration attractiveness for college graduates. At the other end of the scale, there are the Karlovarský, Ústecký and Vysočina regions. Further analyses prove that the most significant innovation centres with more than five thousand employees in localised innovative companies are agglomerations of regional capitals (except for Č. Budějovice, Ústí n. L., H. Králové and K. Vary, which belongs to the second group). The analyses have also identified innovation zones organized in bands; two out of the four most significant zones are located in regions with a worse BEQ. It is also a fact verified in practice that in small microregions industrial innovative companies are the more important bearers of knowledge capital. Although an above-average level of BEQ is associated with a higher competition forcing companies to implement technical and nontechnical innovations with positive effects on competitiveness, its relations to the IPC components at the regional level are not completely straightforward – a strong correlation of IPC with BEQ (and also GDP) was found especially for the indicator of proportion of employees in R&D in the total number of employees. However, at microregional level we confirmed an obvious dependence between the BEQ and the presence of larger innovative companies.

The significance of the UHR component mainly follows from the socially sensitive issue of unemployment, whose solution is considered an important part of the solidarity principle application. Therefore, the selected UHR indicators can be understood as indicators of social impacts of regional economic adaptation processes. The most accurate expression of this adaptation is the development of unemployment rate, which in relation to creation of new jobs interprets the final result of regional interactions between demand and supply at labour markets. To evaluate this component, the following main information sources were used: the registered unemployment rate and the number of vacancies found by the labour offices (period 2005–2010), further the proportion of so-called economically sensitive fields in the employment as of 2005. This is a modified set of fields suffering from strong competition or long-term stagnation in the entire EU [6], mainly textile, metallurgical and food industry, selected branches of chemical and engineering industries and mining (the regulated sector of services focus on local demand mainly – in the Czech Republic the proportion of local consumption is over 90%, whereas in the case of manufacturing industry it is slightly over 35%). Analyses showed a high dependence between the unemployment rate and the level of economic sensitivity as a determining factor of structural unemployment. The highest rate of unemployment persists in regions with the highest proportion of sensitive industries – the Ústecký, Moravskoslezský, Olomoucký and Karlovarský regions. At the other end of the scale there is Prague together with the Středočeský, Plzeňský, Jihočeský and Královéhradecký regions. However, the fact that after the beginning of the recession at the end of the monitored period the structurally most affected regions manifested the lowest rise in unemployment rate indicates that the time of excessive employment rate in companies operating in sensitive fields is over. At the microregional level, a significant relationship was revealed between unemployment rates and deviations of the BEQ from theoretically applicable values derived from a power regression curve (see Fig. 2). This relationship documents the essential role of microregions in the formation of labour markets. A high unemployment rate signals a decrease in UHR, which is usually connected with selective emigration of population. This process, which should theoretically provide balance at labour markets together with capital migration, is in the practice limited by a number of factors, most importantly the differences in prices of flats (e.g. average prices in the most attractive region for work – Prague – are currently 5 times higher than in the least attractive Ústecký region). As regards support for the development of knowledge economy, it is necessary to maintain the dynamic balance between the supply of vacancies and the quality of workforce as one of the key prerequisites of the regional efficiency of education system.

The final stage of the model application focuses on the general evaluation of development potentials of regions based on the synthesis of BEQ (key component with a double level of significance), UHR and IPC. The obtained results allowed us to identify regions with an excellent position – type A, regions with a good position – type B and regions with a less favourable position – type C (see Tab. 4). As expected, the highest development potentials have Prague and the Středočeský region. This also corresponds to the results of the latest ranking of knowledge regions according to which Prague was in the 37th to 40th position within NUTS 2 EU regions in 2005–2007 – the best position from V4 countries [3]. The weaker position of the six regions of C type indicates significant future risks for the regional development. In this context it is interesting that the number of inhabitants in these regions fell by 0.5% between the censuses of 2001 and 2011 (from +1.9% in the Karlovarský region to -2.3% in the Moravskoslezský region). On the other hand, regions of B type manifested increase by 2.5% (from 0.9% in the Královéhradecký region to 4.4% in the Plzeňský region) and regions of A type a significant increase by 11% (from 8.9% in Prague to 13.6% in the Středočeský region).

Tab. 4: Total evaluation of development potentials

Typological groups and subgroups[a]	Region NUTS 3	Region NUTS 2	Classification groups		
			BEQ	UHR	IPC
type A:					
I	Praha	Praha	1	1	1
II	Středočeský	Střední Čechy	2	1	1
type B:					
II	Jihomoravský	Jihovýchod	2	2	1
II	Plzeňský	Jihozápad	2	1	2
I	Pardubický	Severovýchod	2	2	2
I	Liberecký	Severovýchod	2	2	2
II	Jihočeský	Jihozápad	2	1	3
II	Královéhradecký	Severovýchod	2	1	3
type C:					
II	Zlínský	Střední Morava	3	2	2
II	Vysočina	Jihovýchod	3	2	3
II	Olomoucký	Střední Morava	3	3	2
I	Moravskoslezský	Moravskoslezsko	3	3	3
I	Karlovarský	Severozápad	3	3	3
I	Ústecký	Severozápad	3	3	3

a Subgroup I – balanced, II – unbalanced.

Source: Authors' research.

The information capacity of the model was primarily verified based on the hypothesis that the BEQ level is strongly related to the GDP as the main indicator of developmental differentiation. The validity of this hypothesis was confirmed for the NUTS 3 level for which GDP data is available. The mean correlation coefficient for the explored period of 2006–2008 was, despite the limited selection used for BEQ evaluation, 0.95 (0.90 when the Prague region and the Středočeský region are combined), and the logical link between conditions for business and results of business was thus confirmed. The development of regional GDP per capita in PPS has shown long-term slightly divergent tendencies with an indication of the west-east gradient reduction during the economic boom, i.e. 2001 to 2007. Based on the power regression function (individual types of regression functions were assessed with respect to the optimum progress of curve) of the dependence between BEQ and the population size of microregions the second hypothesis that the BEQ values strongly correspond to their sizes as the basic measures of their hierarchical position has been confirmed as well. The average values of BEQ according to size groups of microregions with 180 and more, 90–179, 45–89, 18–44 and less than 8 thousand inhabitants are 1.68, 2.51, 2.97, 3.51 and 3.84. It has to be noted that the power regression function best captures the regularities in the size distribution of towns referred to as rank-size rule [21]. This fact has also been proved by our analysis, in The overall consistency of the model is confirmed by statistical relations of microregional values of BEQ with the other two components – location of innovation companies (correlation coefficient 0.62) and unemployment rate (correlation coefficient -0.63). Inclusion of the model into the general framework of economic growth theories based on the production function can be demonstrated using the following expression:

$$Y_r = A\,[A_1, A_2]\,.\,f\,(I, L, K) \tag{2}$$

Where:

Y_r – level of regional output

A – general variable with components A_1, the macroeconomic (territorially free) and A_2, the regional (territorially bound) factors of economic development

I – knowledge (innovations)

L – labour

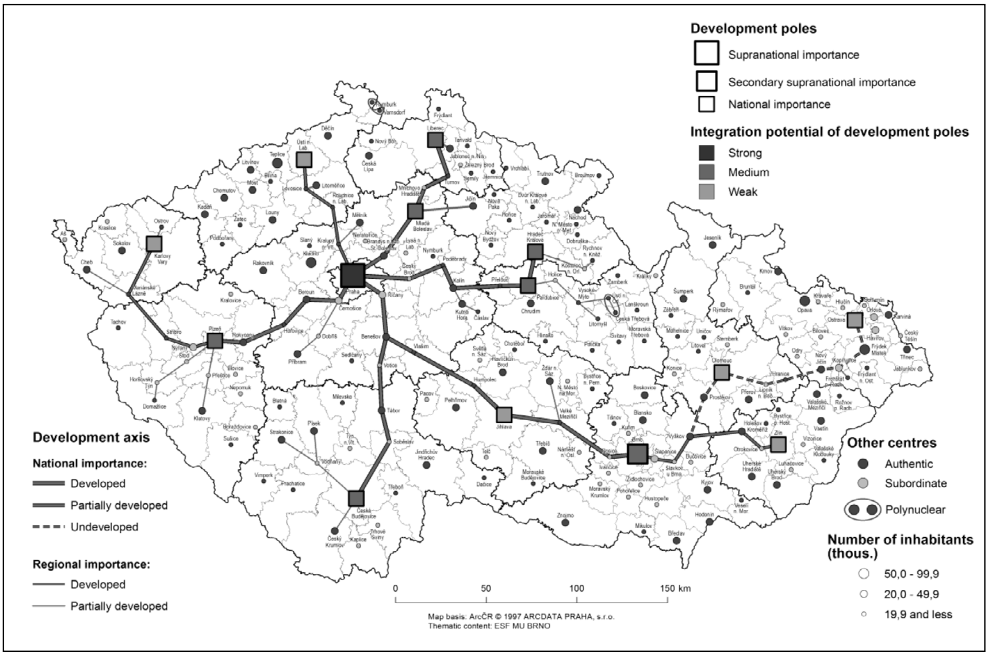
K – capital.

In this context, the BEQ component is a part of the general variable A (factor A_2) and the remaining two components IPC and UHR represent a sum regional reflection of endogenous factors I and L (factor K is in agreement with economic theory considered as a result of the production process).This approach corresponds to the idea that besides natural resources, capital deepening, increases in human capital and technological progress, agglomeration economies can be considered a specific source of economic growth.

4. Generalization and Conceptualization of the Results

The final part is devoted to the generalization of the obtained results and its system conceptualization from the perspective of regional policy. The main connecting element of the used approach is emphasis on integration processes as one from the most important factor of economic development. Generalization respects the principles of developmental and hierarchical differentiation of social systems forming the basic framework of spatial operation of economy, whose most important manifestation is the origination of development poles and axes. The created model, in contrast to older models, allows for their system identification: BEQ values above average (in interaction with IPC) in the case of development poles and significant positive deviations of BEQ real values from theoretical values (in interaction with UHR) in the case of development axes. Development poles generally represent the main spaces for concentration of agglomeration effects and development axes are the main spaces for the spread of positive effects. Both structures are closely related to the territorial distribution of labour whose result is the territorial differentiation according to BEQ and added value, which through the price of production factors determine its optimal territory use (more developed regions with a higher level of added value have a higher marginal productivity of production factors and thus a higher potential for innovation). The increase in territorial distribution of labour changes the ways of achieving the optimum allocation of sources and expands limits of production capabilities of companies with adequate impacts on IPC and UHR. The complex synthesis allows us to create the first spatial model of the economic development of the Czech Republic (see Fig. 3), whose foundation stones are 14 poles and 8 developed axes of national significance.

Fig. 2: Spatial model of economic development of the Czech Republic



Note: Integration potential of development poles reflects their position in system of development axes and also the results of socio-geographical regionalisation [12].

Source: Authors' research.

Although the origination and dynamics of the development poles are mainly results of the historical development and influence of market mechanisms (attempts at an initiation of new development poles were usually unsuccessful), creation of development axes represents an excellent opportunity for an effective orientation of regional policy as the spread of positive effects from development poles contributes to both decreasing regional disparities and increasing regional competitiveness. The most important integration processes are further specified using the bottom-up approach (see Tab. 5).

Microregional level is represented by nodal regions (which can be identified with MEC regions) with the polarity of centre – hinterland, integrated by nodal processes. The most significant of these processes is commuting to work; therefore, the integration process is closely associated with creating regional labour markets. Most of commuting takes place at this hierarchical level – correspondingly, this process can be seen as integration on the basis of labour interactions. An uneven economic development leads to the subordination of weaker nodal centres to their stronger competitors; therefore, we can divide these centres to the authentic and the subordinate ones. At the regional level, there is the polarity of the regional centre (development pole) – subordinate microregions. The economic subordination depends on the dynamics of growth in development poles, overall subordination increases with a higher political and administrative function of centres.

In contrast to the prevailing opinion, in most countries local economy represented by SMEs maintains about 2/3 share in the creation of added value, therefore, we can assume that most production interactions of companies are performed at regional and national level. The most important integration process is the spread of positive effects from development poles along development axes of national significance, involving supplier-customer relationships forming a natural basis of business clusters (spread of negative effects on the contrary supports disintegration of regions) – integration on the basis of production interactions. We also have to add that the development of territorial distribution of labour in the conditions of global economy leads to an overlapping of horizontal and vertical production interactions, induced mainly by the application of specific schemes of value chains within TNC. The macroregional level differs from the previous one by a concentration of central political and administrative functions into the macroregional centre, which transforms the polarity into the usual form of the capital city (the most significant development pole) – subordinate mesoregions. Concentration of political power also stimulates the concentration of managerial functions in entrepreneurial sectors, which consequently strengthens processes of economic integration – integration on the basis of the highest managerial interactions. The highest level of economic integration is global integration with the polarity of development poles of global significance (e.g. London) versus subordinate macroregions. These main global development poles are further supplemented by auxiliary development poles of partial global significance (e.g. Frankfurt a. M.). Here, the integration process is carried out on the basis of commercial relationships and its essential geopolitical manifestation is the creation of supranational economic organisations – integration on the basis of commercial interactions. Both the above-mentioned hierarchical levels play a determining role in the creation of an institutional environment of particular countries.

Tab. 5: Basic determinants of space organisation of economy

Hierarchical level	Bearers of polarisation	Bearers of integration	Key structures
Global	Development poles of global significance	Development super-axes of global significance	International organisations, TNC
Macroregional	Development poles of supranational significance	Development axes of supranational/national significance	State administration, company headquarters
Regional	Development poles of national significance	Development axes of national/regional significance	Territorial administration, big business
Microregional	Development centres	Commuting	Employers, employees

Source: Authors' research.

The results provide potential users with information about the effect of relevant factors and processes determining the development of regions which allow them to evaluate the development potential of regions and to diagnose their strengths, weaknesses, opportunities and threats. From the perspective of the private sector, the principal use is for investment decisions (see website eCBA http://online.ecba.cz/podnikatelskeprostredi/default.aspx, presenting the results of evaluation of development potential of Czech microregions by BEQ factors including a synthetic evaluation of their attractiveness for location of new investments or extension of current investments, in division into technology-, labour-, transport- and supplier-oriented investment intentions). The main sphere of the utilization within the public sector is regional policy and in this context we are presenting a framework proposal of a long-term concept of a regional policy of the Czech Republic.

Due to the unpredictability of economic development we chose the method of flexible development scenarios as the primary tool for regional policy conceptualization. These scenarios are based on the evaluation of development potential and perception of their demanded development and relate to the NUTS 3 level as the basic spatial framework of regional policy application. Altogether three development scenarios were designed: a progressive scenario, a growth scenario and an adaptation scenario. The main objective of the first scenario (regions A) is enhancement of quality of regional development with an emphasis on the development of knowledge economy. In agreement with the high potential of response to global stimuli, the implementation of this scenario is based on an effective use of strengths and opportunities by entrepreneurial entities. The growth scenario is suitable for less developed regions with favourable development potentials (regions B) and its main objective is improvement of quality of economic growth. A typical feature is orientation towards the use of opportunities in combination with the activation of strengths and elimination of weaknesses (the role of public interventions is significant). The main objective of the adaptation scenario (regions C) is strengthening of the competitive position, with an emphasis on diversification and reduction of the unemployment rate. Its typical feature is suppressing of threats in combination with eliminating weaknesses and activating strengths and using opportunities (role of public interventions is highly significant).

Application of the scenarios makes use of a flexible set of tools and their synchronization with appropriate programs of EU. The flexible approach means that the allocation of particular tools reflects different priorities of created scenarios (matter-of-fact correspondence) and the related system of selecting measures reflects the basic territorial framework of their potential development impacts (territorial correspondence). For regions A the main priority is enhancement of IPC and a secondary priority is improvement of BEQ (with an emphasis on quality of life); for regions B the main priorities are improvement of BEQ and enhancement of IPC and a secondary priority is improvement of UHR; for regions C the main priority is improvement of BEQ and UHR and a secondary priority is enhancement of IPC. Each of these proposed priorities can be matched with adequate measures, regarding e.g. the improvement of entrepreneurial or knowledge base in the case of BEQ (e.g. industrial zones projects) and in the case of IPC and UHR mainly support for education and creation of innovations or creation of new labour positions and workforce requalification. In harmony with the results application those measures which contribute to the development of integration processes should be preferred – especially support for the development axes of national/ /supranational and regional significance including business clusters, which are understood as a dynamic part of this processes. An identification of the function of the particular hierarchic levels allows for defining the optimum territorial framework for an assessment of potential impacts of specific measures or projects. For measures related to the UHR component, this framework is the microregional level; for measures related to the BEQ component, it is the regional level; and for measures related to the IPC component it is the macroregional level.

The definitive form of the regional policy can only be elaborated after a consensus among the main stakeholders. In this context, we have to emphasise that efficiency of its implementation is, besides creativity and entrepreneurial spirit of support receivers, considerably determined by the quality of institutional environment. It is also necessary to mention the indisputable fact that a significant condition for the permanent enhancement of regional policy efficiency is removal of relevant information deficits. In this respect we reach a positive conclusion that the elaborated model is transferrable, especially to be applied in more developed countries with polycentric settlement structure and a relevant tradition of regional policy.

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Abstract

INTEGRATIVE MODEL FOR EVALUATION OF DEVELOPMENT POTENTIALS OF REGIONS AND ITS APPLICATION ON AN EXAMPLE OF THE CZECH REPUBLIC

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The aim of this paper is to introduce a new model for the evaluation of development potentials of regions, including methodology, application and conceptualization of the obtained information. The main components of this model are the business environment quality, innovation potential of companies and use of human resources, interpreted using relevant factors or indicators. The model has been applied to the evaluation of Czech regions – 205 administrative districts (microregional level) and 14 NUTS 3 regions (mesoregional level). Information capacity of the model has been proved by the confirmation of the hypotheses assuming strong relationships among business environment quality and regional GDP and population size of regions. A synthesis allowed us to define the main regularities, evaluate the competitive positions of regions and create the spatial model of the economic development of the Czech Republic. Special attention has been given to the unique method for the identification of territorial systems of poles and axes of development and further to the hierarchy of integration processes (using the profile interaction method). Subsequently, we conceptualized the results from the perspective of regional policy creation using the method of development scenarios. This allows for a flexible optimization of the main priorities and tools of a regional policy (regions are defined and territorially specified by means of flexible sets of relevant measures). From a theoretical perspective, we extend the knowledge about the processes of polarization and integration as key manifestations of the principles of developmental and hierarchical differentiation of society in the conditions of increasing globalisation.

Key Words: *Regional development, business environment, innovation potential, human resources, competitiveness.*

JEL Classification: *R12, R15, R58.*

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HYPOTÉZA PERMANENTNÍHO PŘÍJMU V ZEMÍCH VISEGRÁDSKÉ SKUPINY

Václava Pánková

Úvod

Spotřeba tvoří zhruba 50–70 % HDP [24]. Výdaje domácností na konečnou spotřebu a její souvislosti s dalšími ekonomickými a společenskými ukazateli popisují různé teorie, které také různě vysvětlují spotřebitelské chování. Stručný a srozumitelný přehled o teorii spotřebních funkcí a jejich ekonomické podstaty naleznou zájemci např. v článku [22] a v detailech pak v další literatuře.

Studie věnované konkrétním ekonomikám jsou založeny na předpokladu platnosti určité teorie. Koncept permanentní spotřeby definoval v roce 1957 M. Friedman; spolu s Modiglianiho teorií životního cyklu z roku 1954 jsou to dvě alternativní reakce na zjištění, že dřívější Keynesovu hypotézu absolutního příjmu (jak ji pracovně nazývá současná literatura, např. [9]) nelze empiricky doložit pomocí agregátních dat. První dvě zmíněné teorie, ač zcela autonomní, bývají někdy používány v kombinaci (např. [28]). Jako s v principu totožným konceptem s nimi zachází Hall [13], jehož článek položil základy k technice testování hypotézy permanentnosti, jak ji navrhují Campbell a Mankiw [4]. Agregátní spotřeba je také důležitou veličinou pro autory politických rozhodování, což je zdůrazněno a v souvislosti s jednotlivými teoriemi vysvětleno v [10].

Hypotéza o permanentním příjmu a spotřebě vychází z předpokladu, že subjekt spíše plánuje svoje spotřební výdaje v závislosti na výši dlouhodobě očekávaného příjmu, než aby se rozhodoval podle příjmu aktuálního. Pro tvůrce hospodářské politiky je důležité, že při platnosti této hypotézy se spotřebitel rozhoduje na základě svých expektací a jeho spotřební výdaje jsou proporční permanentnímu příjmu. Úroveň této proporčnosti může prostřednictvím úrokové míry ovlivnit centrální banka. Je třeba také počítat s tím, že spotřebitel bude jinak reagovat na šoky permanentní než na šoky tranzitorní. Ohlášení dočasného zvýšení daní v předem vymezeném krátkodobém časovém horizontu povede k jiné reakci, než jakou by způsobilo zvýšení trvalé. Permanentním šokem může být např. změna sociálního systému, jak to dokladuje např. [26].

Za předpokladu platnosti hypotézy permanentnosti je možné neměřitelnou veličinu permanentního příjmu na agregátní úrovni vypočítat při znalosti disponibilního příjmu a použití mechanismu adaptivního očekávání. Teprve mnohem později byl formulován postup, který umožnil posoudit, zda v dané ekonomice je tato hypotéza opravdu platná. Empirická zjištění však spotřebu na úrovni permanentního příjmu velmi často nepotvrzovala, ačkoliv samotná teorie nebyla nijak zpochybněna. Realistické posouzení umožnil až test Campbella a Mankiwa [4], který pracuje s předpokladem, že permanentní příjem využívá jen část domácností a jejich procentní podíl je možné vyčíslit.

Cílem tohoto článku je (a) Sjednotit texty směřující k formulaci kriteria pro stanovení podílu domácností, na jejichž spotřební výdaje lze aplikovat teorii permanentního příjmu. Výsledkem je jednorovnicový ekonometrický model s parametrem určujícím právě velikost tohoto podílu. (b) Zjistit, jaké množství domácností v ČR realizuje spotřební výdaje v souladu s hypotézou permanentního příjmu. Vzhledem k nemožnosti přímé kontroly ekonomické správnosti výsledku je aplikace rozšířena na země Visegrádu a, rovněž kontrolně, jsou výpočty provedeny také pro Rakousko. Vzhledem k povaze dat se ukázalo jako vhodnější analyzovat Visegrád jako celek, i za cenu ztráty jemnějšího rozlišení.

Finanční a ekonomické disturbance z konce prvního a začátku tohoto desetiletí se projevují v disponibilních datech a mohly by ovlivnit výsledky. Proto je věnována pozornost i implementaci faktoru krize do spotřebních modelů.

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1. Permanentní příjem a spotřeba

Friedman [12] vyšel z předpokladu, že lidé se snaží udržet si konstantní životní úroveň s ohledem na svůj „normální" příjem, přestože jejich aktuální příjem může být odlišný. Klíčová je úvaha, že plánovanou spotřebu lze ztotožnit se skutečnou spotřebou. Příjem Y_t a spotřebu C_t postuluje jako veličiny složené ze dvou částí, permanentní Y^P_t, resp. C^P_t a tranzitorní Y^T_t, resp. C^T_t, tedy

$$Y_t = Y_t^P + Y_t^T \ , \ C_t = C_t^P + C_t^T \qquad (1)$$

přičemž žádná z obou složek není pozorovatelná. Permanentní veličiny jsou ve vztahu úměrnosti dané koeficientem β, $C^P_t = \beta Y^P_t$, tranzitorní části z dlouhodobého hlediska směřují limitně k nulové hodnotě. Permanentní příjem lze poměrně snadno vypočítat za předpokladu adaptivního očekávání (postup detailně např. v [7]). Je-li aktuální disponibilní příjem vyšší / nižší než permanentní, je navýšen / snížen o částku proporční příslušnému rozdílu

$$\Delta Y_t^P = Y_t^P - Y_{t-1}^P = \lambda(Y_t - Y_{t-1}^P) \ , \qquad (2)$$

kde $0 \le \lambda \le 1$.

Parametr λ vystihuje předpoklad, že přizpůsobení se permanentnímu příjmu není provedeno plnou částkou, ale část rozdílu je důsledkem variability tranzitorní složky. S výrazem (2) lze dále pracovat; permanentní příjem lze vyjádřit a následně i vypočítat jako kombinaci aktuálního a zpožděných disponibilních příjmů; výsledkem je i stanovení hodnoty parametru λ. Detaily v [7]. Z hypotézy o proporčnosti permanentní spotřeby vzhledem k permanentnímu příjmu vyplývá $C_t = \beta Y_t^P + C_t^T$, C_t^T lze vnímat jako náhodnou složku modelu, který pak bude zahrnovat již pouze měřitelné veličiny. Také je možné převést (2) na schéma známé jako Koyckovo geometricky rozdělené zpoždění transformující vztah do kompaktního tvaru

$$C_t = \beta\lambda Y_t + (1-\lambda)C_{t-1} + \theta_t \ , \qquad (3)$$

kde $0 \le \lambda \le 1$ se zjišťuje při aplikaci mechanismu adaptivního očekávání, β je již výše zmíněný koeficient úměrnosti, θ je náhodná složka. Podle Friedmana jsou λ i β funkcí úrokové míry, za kterou si spotřebitel půjčuje. Z (3) je patrné, že

že mezní sklon ke spotřebě je $\frac{dC_t}{dY_t} = \lambda\beta$, zatímco

dlouhodobě, při vymizení náhodných vlivů, dostaneme $\overline{C} = \beta\lambda\overline{Y} + (1-\lambda)\overline{C}$ a tedy $\overline{C} = \beta\overline{Y}$, když $\overline{C}, \overline{Y}$ představují rovnovážné hodnoty. Je také evidentně $\beta > \lambda\beta$, dlouhodobý vliv příjmu na spotřebu je tedy vyšší než ukazatel krátkodobý.

2. Testování permanentnosti

Samotný výpočet ale nijak neřeší otázku, zda hypotéza o permanentním příjmu je v dané ekonomice skutečně platná. Navíc se ukázalo, že aplikace selhávají z důvodu nerespektování nestacionarity příslušných veličin (podrobně [6]) a vztahů vedoucích k formulaci racionálních očekávání [21]. Lucas [21] argumentuje nemožností dlouhodobě udržet stabilní relaci mezi disponibilním a permanentním příjmem. Změny jiných ekonomických nebo sociálních veličin, např. cenových relací nebo věku atp., mohou změnit preference a představu o optimálním rozhodnutí každého ekonomického subjektu, což se projeví i na agregátní úrovni. Cestou k řešení je pak úloha maximalizovat užitek při racionálních očekáváních o budoucím vývoji užitkové funkce.

Východiskem k testování hypotézy permanentnosti se staly závěry publikované Hallem [13]. Problém formuluje jako dynamickou optimalizační úlohu maximalizovat očekávaný užitek z celkové spotřeby během T období životního cyklu, přičemž se spotřebitel podle svých preferencí rozhoduje mezi spotřebou aktuální a budoucí. Z Hallových výsledků vyplývá důsledek, že k určení spotřeby C_{t+1} není třeba žádných jiných informací, než hodnoty spotřeby C_t. Konkrétní souvislost závisí na zvolené užitkové funkci; je-li tato kvadratická, bude

$$C_{t+1} = \beta_0 + \beta_1 C_t + \varepsilon_{t+1} \qquad (4)$$

s parametry β_0, β_1, a náhodnou složkou ε_{t+1}. Ke stejnému závěru dochází také Flavin [11], která ve své práci harmonizuje na sobě nezávislé studie [13] a [27].

Formule (4) znamená také, že

$$E(C_{t+1}) = \beta_0 + \beta_1 C_t \ , \qquad (5)$$

kde $E(C_{t+1})$ značí očekávanou spotřebu v období $t+1$. Tato je tvořena z informací dostupných v čase t, což odpovídá konceptu racionálních očekávání.

Testování hypotézy o permanentním příjmu je založeno na zkoumání otázky, zda očekávanou spotřebu $E(C_t)$ může nebo nemůže, kromě C_{t-1} vysvětlit i vektor dalších proměnných X_{t-1}. Za obvyklého předpokladu, že očekávané vztahy jsou lineární, dostaneme hledanou odpověď aplikací F-testu na skupinu proměnných X_{t-1} v regresi.

Hall [13] aplikoval svoje výsledky na poválečná data USA a potvrdil přítomnost permanentní spotřeby v tomto období. V reakci na Halla provedli analogickou studii Daly a Hadjimateou [5] pro Velkou Británii. Permanentní příjem a spotřebu nepotvrdili s ironickým komentářem, že „patrně jsou Angličané méně racionální než Američané, což by ale dozajista bylo nutné vysvětlit".

I v dalších zemích se ukázalo, že spotřeba je významně ovlivněna běžným příjmem, což vyvolalo diskusi o významu finanční hotovosti (přehled uvádí např. [19]. Omezení v tomto směru neumožňuje spotřebitelům přijmout strategii permanentního příjmu.

Z Hallova přístupu k testování hypotézy o permanentním příjmu vycházejí a rozšiřují jej Campbell and Mankiw [4]. Předpokládají dvě skupiny spotřebitelů, jedni reflektují běžný disponibilní příjem $C_{1t} = Y_{1t}$ a druzí odvozují svoji spotřebu od permanentního příjmu $C_{2t} = Y^P_{2t}$. V souhrnu je tedy disponováno příjmem

$$Y_t = Y_{1t} + Y^P_{2t} = \omega Y_t + (1-\omega) Y_t\,,\ \ 0 \le \omega \le 1\,. \tag{6}$$

Veličina ω je zde technickým koeficientem pro vyjádření komplementárnosti obou jevů. Z výše uvedeného je zřejmé, že $C_{1t} = \omega Y_t$, a proto $\Delta C_{1t} = \omega \Delta Y_t$ podobně $C_{2t} = (1-\omega) Y_t$ a $\Delta C_{2t} = (1-\omega)\Delta Y_t$, kde Δ značí přírůstky příslušných veličin. Flavin [11] dovodila na základě (4), že náhodná složka v tomto procesu představuje inovace v běžném příjmu, které poskytují informace pro revizi příjmu permanentního. Proto poslední rovnice může být zapsána i ve tvaru $\Delta C_{2t} = \alpha + (1-\omega)\varepsilon_t$,
kde α je konstanta a ε_t příslušná inovace.

Pro změny v agregované spotřebě, běžné i permanentní, tedy platí

$$\Delta C_t = \Delta C_{1t} + \Delta C_{2t} = \alpha + \omega \Delta Y_t + (1-\omega)\varepsilon_t\,. \tag{7}$$

Práce s přírůstky místo úrovňových hodnot zvyšuje šanci, že pracujeme se stacionárními časovými řadami, navíc do konečného vztahu vstupují pouze pozorovatelné aktuální hodnoty C_t a Y_t.

Výraz (7) je pro testování hypotézy permanentního příjmu klíčový. Hypotéza o permanentním příjmu přechází na formulaci $H_0 : \varpi = 0$. Pokud H_0 nebude zamítnuta, uskutečňuje se spotřeba jako permanentní a má charakter náhodné procházky, tudíž není predikovatelná. V opačném případě spotřeba kopíruje vývoj příjmu, ať již ve smyslu (i) nebo (ii), jak je popsáno výše. Empiricky se ukazuje, že ϖ je ve zkoumaných ekonomikách spíše nenulové a určuje podíl spotřebitelů konzumujících na základě disponibilního příjmu. Praktické studie prokazují, že více ekonomicky rozvinuté země mají spíše nižší hodnoty parametru ϖ. Je to logický důsledek faktu, že v rozvinutých zemích je mnohem více příležitostí k intertemporální substituci finančních zdrojů.

Analýzám permanentnosti je věnována řada dalších prací a věnují se ekonomikám rozvinutým i rozvíjejícím se. Země EU15 jsou předmětem studií např. [23] nebo [17]. Ukazují, že v rozmezí 1980–2005 mají jednotlivé ekonomiky dosti rozdílné hodnoty míry změny spotřeby v reakci na změnu příjmu. Nejvyšší ukazatel ϖ, a tedy nejmenší podíl domácností se spotřebou podle permanentního příjmu, má Itálie; reakce na úrovni ϖ = 0,980 je pětinásobkem nejnižší hodnoty ϖ = 0,196, kterou vykazuje Dánsko. Z rozdílnosti pak autoři dovozují, že jednotná hospodářská politika EU by tak nutně měla rozdílné dopady na jednotlivé členské státy.

Ve studii pro Světovou banku [3] je testována permanentnost v rurálních oblastech Indie. Autor ji nepotvrzuje, zároveň ale zjišťuje, že nelze uplatnit ani tradiční teorii spotřeby. Studie [18] pracuje s ekonomickými daty Pákistánu a na agregátní úrovni hypotézu permanentnosti odmítá; korespondují s ní pouze některé domácnosti, jejichž vlastnosti ale nejsou blíže vymezeny.

V [2] se pracuje s údaji o jednotlivých německých domácnostech; panelová data jsou sestavena z mikrocensů konaných v tomto tisíciletí (poslední 2007, tedy před krizí). V souhrnu se domácnosti poněkud odlišují od klasické představy o permanentnosti: reakce na permanentní šoky jsou slabší a tranzitorní šoky jsou vnímány citlivěji, než jak to vymezuje teorie. Při podrobnějším zkoumání se ukázalo, že na nečekané tranzitorní změny pružněji reagují domácnosti s omezenými finančními zdroji.

V českých podmínkách zkoumali platnost hypotézy permanentního příjmu v souvislosti s kupónovou privatizací Hanousek a Tůma [14]. Motivací bylo specifikum této situace a 1500 respondentů bylo osloveno s cílem získat data, která byla předmětem odborného zájmu autorů. V textu, který se orientuje více na ekonomické a sociální aspekty kupónové privatizace, než na modelový, ekonometrický a statistický aparát, dovozují, že pouze malá část nově a nečekaně získaných akvizic byla konzumována, což by spíše podporovalo hypotézu permanentnosti.

Zevrubnou analýzu spotřební funkce, teoretické základy i variantní koncepce ekonometrického modelování zpracovali Arlt a další [1]. Rovněž tato práce, provedená v rámci výzkumu ČNB, akcentuje vlivy různých finančních ukazatelů. Hypotézu permanentního příjmu pro celou ekonomiku autoři na základě svojí analýzy zamítají. Zjišťují, a také vysvětlují, nestabilní spotřebitelské chování domácností.

3. Vliv novodobých krizí na spotřebu

Finanční krize, která se v roce 2008 projevila v USA, postupně ovlivnila celosvětovou ekonomickou situaci. Důsledky pro spotřebu jsou sice v různých ekonomikách odlišné, společným rysem je ale tendence ke snižování spotřeby, zejména služeb a předmětů dlouhodobého užívání. V [20] autoři vyčíslili propad agregované spotřeby v USA v roce 2008 na 3 % HDP. Kombinací ekonometrických a simulačních technik dovozuj, že budoucí krizové šoky povedou nejen k náhlému snížení spotřeby, ale také ke zvýšení míry úspor. Období od prosince 2007 do června 2009, označované v USA jako „velká recese", a jeho dopad na spotřebu analyzovali tvůrci studie [25]. Za zajímavé považují zjištění, že propad ve spotřebě byl vyšší, než propad příjmů.

Zkušenosti s finanční krizí a jejím vlivem na spotřebu učinily asijské ekonomiky již v roce 1997. Její dopad zmiňuje Kuan-Min v práci [19], která se primárně věnuje ověření hypotézy o permanentním příjmu v deseti asijských zemích. Zdánlivě nesourodý soubor ekonomik, zahrnující vedle třeba Singapuru a Jižní Korey také např. Nepál a Myanmar, vykazuje některé společné rysy. Pro žádnou ze zemí se nepotvrzuje hypotéza permanentnosti a všechny vykazují význam omezených finančních zdrojů pro spotřebu po krizovém roce 1997.

Metodicky tato práce vychází z myšlenky [15], že Friedmanův postulát je zprávou o dlouhodobé souvislosti mezi veličinami. Dlouhodobě souvislé veličiny lze charakterizovat vztahem kointegrace; je tedy na místě otázka, zda pozorovatelné hodnoty C_t a Y_t jsou spolu kointegrované. Pokud ano, lze jejich vztah vyjádřit modelem typu mechanismus korekce chyby (ECM). Zde konkrétně

$$\Delta C_t = \alpha + \beta \Delta Y_t + \gamma \, ecm_{t-1} + u_t \,, \tag{8}$$

kde $ecm_t = C_t - \xi_0 - \xi_1 Y_t$, je korekční složka na úrovni rezidua z krátkodobého spotřebního vztahu $C_t = \xi_0 + \xi_1 Y_t$, u_t je náhodná složka, α, β, ζ_0, ζ_1 parametry. Výklad podstaty rovnice (8) se opírá výhradně o obecnou teorii časových řad a je mimo rámec tohoto textu; zde se totiž primárně jednalo o vyřešení problému zdánlivé regrese nestacionárních časových řad a formulování dlouhodobých souvislostí mezi ekonomickými veličinami. Nově vzniklé teoretické poznatky pak nalezly široké možnosti aplikace, mimo jiné i právě při testování hypotézy permanentního příjmu. Potřebné informace nalezne čtenář např. v [15]. V souvislosti s naším tématem je významná hodnota parametru β. Je-li statisticky významně nenulová, potvrzuje závislost spotřeby na aktuálním příjmu a nelze přijmout hypotézu permanentnosti. Pokud je nulová, odpovídá to platnosti hypotézy o permanentním příjmu v celé ekonomice. Nenulovou hodnotu β můžeme exaktně interpretovat slovy: zvýší-li se přírůstek disponibilního příjmu o jednotku, zvýší se přírůstek spotřebních výdajů o β jednotek; fakticky je ale zřejmé, že β je analogií parametru ϖ ze vztahu (7).

V [8] se připomíná, že vliv krize na HDP a ekonomický růst je předmětem mnoha studií, ale spotřebě jako největší složce HDP je věnováno jen málo pozornosti. Pokud by platila teorie permanentnosti, mohla by být krize považována za tranzitorní záležitost a pouze změna permanentního příjmu by mohla nastartovat významné změny ve spotřebě. Nicméně, tato teoretická úvaha není konzistentní s empirickými pozorováními. Data z 99 zemí analyzují pomocí modelu

$$C_t = \alpha C_{t-1} + \beta Y_t + \gamma \pi_t + \delta_1 D1 + ... + \delta_k Dk + u_t \quad (9)$$

v němž π_t je inflace a vliv krizí je zkoumán zařazením 0–1 proměnných D_i které nabývají hodnoty 1 v i-tém roce krize a 0 v ostatních letech; α, β, γ, δ jsou parametry modelu. V případě, že $D_i = 1$, stane se příslušné δ_i konstantou ve vztahu (16) a pozmění hodnotu endogenní proměnné C_t v důsledku vlivů během krizového roku. Výsledky zmiňované studie rovněž ukazují, že spotřeba v krizovém období klesá více, než příjem, což vysvětlují poklesem spotřebitelské důvěry.

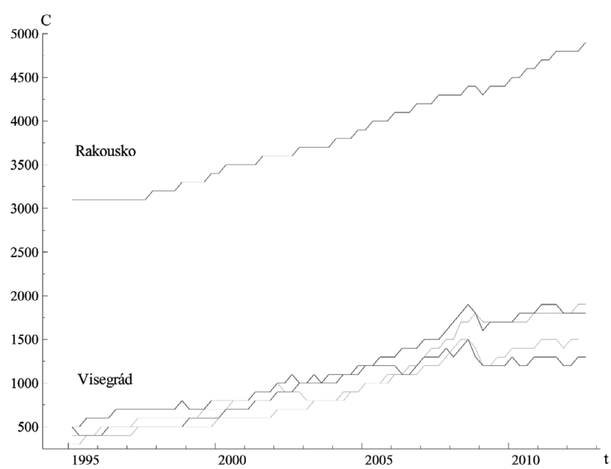
4. Aplikace pro země Visegrádské skupiny

Výše uvedené přístupy pro testování platnosti hypotézy permanentního příjmu, včetně stanovení procentního podílu příslušných domácností, budou aplikovány na ekonomiky Visegrádské skupiny, tedy České republiky, Slovenska, Maďarska a Polska. Obecný poznatek, že spotřební výdaje v souladu s hypotézou permanentního příjmu realizují spíše domácnosti disponující určitým finančním zajištěním, neumožňuje učinit si předběžná očekávání o pravděpodobných výsledcích, tj. provedení ekonomické verifikace. Do souboru bylo proto přiřazeno také Rakousko, čímž bude provedena alespoň určitá forma kontroly; pokud by výpočty ukazovaly menší podíl konsumentů permanentního příjmu v Rakousku ve srovnání s kteroukoliv z ostatních ekonomik, byl by to oprávněný důvod k pochybnostem o důvěryhodnosti výsledků.

Data byla převzata z databáze Eurostat; jsou čtvrtletní od 1995Q1 do 2012Q3 včetně, a sezónně očištěná (provedeno Eurostatem). Konečná spotřeba domácností je v eurech na obyvatele. Informace o disponibilním příjmu bohužel nebyly v potřebném rozsahu dostupné, proto byla v celém souboru jako příjem použita veličina HDP v eurech na obyvatele; v ekonometrických technikách je to známý koncept náhradní (proxy) proměnné. Ve výše zmíněném přehledu aplikací používá tuto záměnu např. Kuan-Min [19]. Z finančních ukazatelů, které bývají nezřídka používány jako další vysvětlující proměnná do zmíněných modelů, se nejobvykleji zařazuje úroková míra. Pro všechna potřebná pozorování však nebyl tento údaj jednotně k dispozici. Vliv zahrnutého harmonizovaného cenového indexu HICP na vysvětlení spotřeby se ukázal jako statisticky neodlišitelný od nuly (ČR, Slovensko, Maďarsko) nebo s kladným znaménkem (Polsko, Rakousko), což znamená, že prokonsumní faktory jsou významnější, než je vliv zvyšování cenové hladiny. Proto do konečných výpočtů nebyla tato veličina zahrnuta.

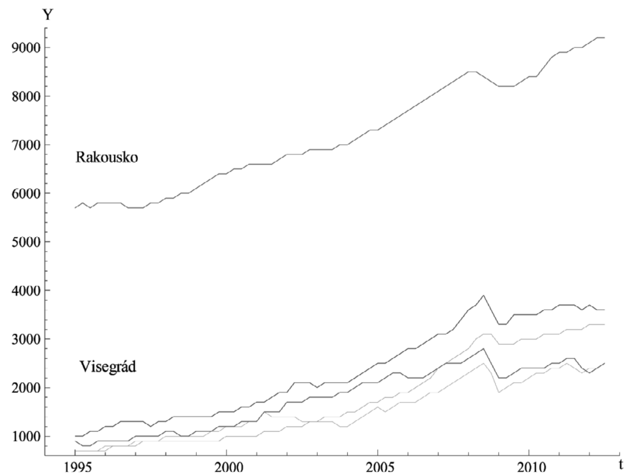
V dalším bylo proto pracováno pouze se spotřebou C a příjmem Y. Obrázky 1 a 2 ukazují

Obr. 1: Konečná spotřeba na osobu v eurech – C



Zdroj: vlastní dle dat z Eurostatu

Obr. 2: HDP na osobu v eurech – Y



Zdroj: vlastní dle dat z Eurostat

průběh obou veličin; v obou nejvýše položená křivka odpovídá Rakousku a země Visegrádu vykazují velmi podobný vývoj na výrazně nižší finanční úrovni. Viditelný propad v roce 2008 bude vhodné ošetřit zavedením 0–1 proměnné.

Měřeno individuálně pro jednotlivé ekonomiky, všechny časové řady jsou I(1), což bylo zjištěno ADF testem. Příslušné dvojice C a Y jsou kointegrované dle testu Engleho a Grangera, proto lze aplikovat nejen test Campbella a Mankiwa dle modelu (7), ale také mechanismus korekce chyby (8) jako alternativní přístup. Všechny výpočty byly provedeny pomocí softwaru PcGive s následujícími ekonometrickými charakteristikami.

Výsledky jsou shrnuty v Tabulce 1.

Tab. 1: Výsledky odhadů modelů (7) a (8)

	$\hat{\varpi}$	t-prob	$\hat{\beta}$	t-prob	R^2
ČR	0,415	0,000	0,475	0,000	0,52
Maďarsko	0,410	0,000	0,423	0,000	0,59
Polsko	0,475	0,000	0,506	0,000	0,54
Slovensko	0,416	0,000	0,556	0,000	0,43
Rakousko	0,146	0,030	0,189	0,014	0,23

Zdroj: vlastní

Aplikací Hausmanova testu (např. [16], [29]) bylo prověřeno, že je možné ΔY považovat za exogenní. Hypotézu o exogenitě nebylo možné přijmout pouze v případě Rakouska. Důsledkem je, že příslušný (pro Rakousko) parametr $\hat{\varpi}$ nemusí nutně být konsistentní. Vzhledem k tomu, že studie se primárně zaměřuje na Visegrád, nebyla tato situace dále řešena (např. použitím instrumentálních proměnných, viz [13]).

Možnosti případného vlivu krizových let byly zkoumány zařazením odpovídajících 0–1 proměnných pro roky 2008–2012. Vesměs se projevily jako statisticky nevýznamné, v tabulce proto nejsou zahrnuty.

Jsou patrné rozdíly mezi hodnotami parametrů (model (7)) a významově srovnatelnými parametry $\hat{\beta}$ z odhadů typu (8). Parametr $\hat{\varpi}$ byl odhadován metodou korigující výskyt autokorelace náhodné složky, k níž koeficient determinace není relevantním ukazatelem. Nicméně, při odhadu metodou nejmenších čtverců (a následně konstatované negativní autokorelaci podle DW testu) se ukazatel R^2 většinou pohyboval na nevysokých hodnotách, vždy ale při statisticky významných výsledcích F–testů.

Dále je třeba upozornit, že ve všech datech se dosti často vyskytují hodnoty, které vykazují nulové přírůstky; je to patrné i z vývoje obou grafů Obr. 1 a 2. Časové řady tak mají sice 70 pozorování, ale s četnými nulovými hodnotami, což má za následek sníženou vypovídací schopnost reprezentovanou nepříliš vysokými hodnotami koeficientu determinace.

Na základě výše uvedených poznatků byla data Visegrádské skupiny zpracována jako panel pomocí sdílené regrese (pooled regression) s výsledky v Tabulce 2.

Tab. 2: Výsledky odhadu modelů (7) a (8) pro datový panel

	$\hat{\varpi}$	t-prob	$\hat{\beta}$	t-prob	R^2
Visegrád	0,531	0,000	0,531	0,000	0,96

Zdroj: vlastní

Přínosem použití panelových dat jsou vydatnější odhady parametrů a viditelně i významnější hodnota koeficientu determinace.

Připomeňme, že $(1 - \hat{\varpi})*100$, a potažmo i $(1 - \hat{\beta})*100$, stanovuje počet procent domácností, jejichž spotřební výdaje naplňují hypotézu permanentního příjmu.

Tab. 3: Procentní podíl domácností se spotřebními permanentního příjmu výdaji dle hypotézy

	$(1 - \hat{\varpi})*100$	$(1 - \hat{\beta})*100$
ČR	58,5	52,5
Maďarsko	59	57,7
Polsko	52,5	49,4
Slovensko	58,4	44,4
Visegrád	46,9	46,9
Rakousko	85,4	81,1

Zdroj: vlastní

Žádná z jednotlivých zemí evidentně nenaplňuje hypotézu permanentního příjmu ve vztahu k celé ekonomice. Nicméně nenulový podíl domácností realizujících spotřební výdaje v souladu s touto hypotézou je nesporný. Z Tabulky 3, stejně jako z obou předchozích, je patrné, že model (7) neposkytuje stejné výsledky jako model (8). Zatímco Maďarsko je v obou případech charakterizováno téměř shodně, Slovensko je hodnoceno s nejmarkantnější disproporcí. O případném preferování některého z obou modelů nelze rozhodnout; hovoříme o výsledcích, které jsou statisticky verifikované, avšak v ekonomické rovině nevíme, jaké výsledky jsou „správné“. Příčinou disproporcí bude spíše velký podíl nulových hodnot v datech a nepříliš vysoké koeficienty determinace, jak je zmíněno výše. Nasvědčuje tomu i shoda v případě shrnutí všech dat do panelu Visegrádu. Svoji roli jistě hraje i ne zcela ideální náhrada disponibilního příjmu veličinou HDP na osobu.

Ačkoliv je z obrázků 1 a 2 vidět, že v roce 2008 došlo k patrným kvantitativním změnám v ukazatelích C i Y, zařazením odpovídající 0–1 proměnné do obou modelů, stejně jako snahou takto odlišit i následující roky, se neprokázal statisticky významný vliv na sledovaný ukazatel, proto tyto výpočty nejsou explicitně uvedeny. Krizové jevy v tomto kontextu neovlivnily vztah domácností k permanentnímu příjmu.

Závěr

Spotřeba je velmi významnou složkou HDP a způsob její realizace má důsledky i pro tvorbu hospodářské politiky. Článek rekapituluje koncept permanentního příjmu a spotřeby, zejména z modelového a ekonometrického hlediska. Četné empirické studie potvrzují, že spotřební výdaje, na které lze aplikovat hypotézu permanentního příjmu, vykazují spíše domácnosti přiměřeně finančně zajištěné. Formální testy založené na ekonometrickém zpracování agregátních dat proto hypotézu permanentnosti potvrzují především u velmi vyspělých ekonomik. Jemnější testování pak ukazuje míru, s níž se ekonomiky k této hypotéze přibližují.

Model Campbella a Mankiwa [4] je výsledkem sledování hypotézy permanentního příjmu a postupného hledání a korigování vhodného ekonometrického aparátu. Přístup realizovaný pomocí modelu korekce chyby, např. dle [15], má počátek v rozvoji ekonometrické teorie obecně, zejména v oblasti nestacionárních časových řad, a následném zjištění, že hypotéza permanentního příjmu může být vhodnou aplikací.

Z modelů (7) a (8) je patrné, že parametry ϖ a β nebudou příliš odlišné. Použití obou alternativ je proto vhodné, právě pro možnost srovnání. Zároveň je z toho ale zřejmé, že podíl domácností se spotřebními výdaji na úrovni permanentního příjmu nebude těmito postupy nikdy stanoven jako jediné exaktní číslo. Kromě rozdílnosti vyplývající z volby modelu má na výsledek vliv také charakter dat i sledované období. Ostatně i Hanousek a Tůma [14] v roce 1997 pro ČR hypotézu permanentního příjmu spíše potvrzují, zatímco Arlt a další [1] ji v roce 2001 nepřijímají.

Zjištěné výsledky ukazují, že v žádné ze zkoumaných zemí neplatí hypotéza permanentního příjmu pro ekonomiku jako celek. Vzhledem k obecným poznatkům, že více ekonomicky rozvinuté země vykazují větší množství domácností se spotřebními výdaji na úrovni permanentního příjmu, nepřekvapí, že zde nejvyšší podíl takových zemí vykazuje Rakousko. Množství domácností, na jejichž spotřební výdaje je možné aplikovat hypotézu permanentního příjmu, v ČR, Slovensku, Maďarsku a Polsku se příliš neliší a dá se zhruba stanovit na 50 % domácností. Toto zjištění může mít význam pro tvůrce rozsáhlých modelů, např. typu DSGE, kde řada parametrů je kalibrována. V praxi se některé parametry přejímají z jiných, často zahraničních, studií. Jak se ale ukazuje, podíl domácností se spotřebními výdaji na úrovni permanentního příjmu není údaj přenosný jen na základě některých vnějších podobností: Rakousko je malá otevřená ekonomika se stejným počtem obyvatel jako ČR, příslušný parametr přesto je v obou ekonomikách odlišný. Výsledky nejsou statisticky významně ovlivněny snížením spotřeby v roce 2008, event. i později; faktor permanentnosti nedoznal viditelných změn pod vlivem krizových jevů.

Ukazuje se, že kromě explicitní a nutně i zjednodušující formalizace v modelech jsou spotřební výdaje odpovídající permanentnímu příjmu implicitně spojovány s určitou úrovní finančních rezerv. Vzhledem k tomu, že celkový objem úspor v ekonomice je znám, avšak banky se obvykle zdráhají informovat detailněji o počtech klientů a rozvrstvení úspor mezi jednotlivce, může být procentní ukazatel počtu konzumentů na úrovni svého permanentního příjmu určitým vodítkem. Ekonomicky perspektivní domácnosti mohou ovšem v počátcích podporovat svoji spotřebu úvěrem, ale i zde se předpokládá, že výše půjčky je podložena racionálně očekávaným budoucím příjmem a po splacení bude následovat fáze vytváření vlastních finančních rezerv. Aniž by to bylo vysloveno, teorie pracuje s konceptem spotřebitele společensky i finančně odpovědného a ekonomiky, která mu tento způsob chování umožňuje. Zde je prostor pro tvůrce politiky, jak již bylo zmíněno v úvodu.

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Abstract

PERMANENT INCOME HYPOTHESIS IN VISEGRÁD COUNTRIES

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Consumption following a permanent income hypothesis (PIH) is a theoretical concept the validity of which in a given economy during a given period can be confirmed or non-confirmed by the help of an econometric approach. Mathematical formulation of PIH following adaptive expectation technique given by Friedman and the ways of testing the validity of permanency are recapitulated. Two alternative approaches are established: (a) Model published by Campbell and Mankiw [4] looking for an appropriate econometric technique starting by permanent income hypothesis; based on the results of Hall and Flavin, the model allows to reflect an existence of both PIH and non – PIH consumers and to quantify their proportion. (b) Model of error correction mechanism as a theoretical concept bringing a solution of problems arising by dealing with non – stationary time – series (e.g. [15]) which happened to suite PIH as an application. Possible influence of financial and economic crises is proposed to be measured by introducing relevant dummies in the models.

Using the actual data of the Visegrád group (Czech Republic, Hungary, Poland, Slovakia) and comprising Austrian economy to provide a comparison, both models are estimated. Small discrepancies according to model in question are evident by following individual economies. Treating Visegrád as a panel, both models provide an identical result. PIH cannot be applied to whole economies, nevertheless, as it is shown about 50% of households in the four Visegrád economies consume according to PIH. Critical years 2008–2012 (end of the data sample) do not change this result significantly.

Key Words: *Consumption expenditures, permanent income hypothesis, econometric techniques.*

JEL Classification: *C01, C22, E21.*

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SELECTED ISSUES OF THE MINIMUM WAGE IN THE CZECH REPUBLIC

Tomáš Pavelka, Marek Skála, Jan Čadil

Introduction

The minimum wage can be defined as the lowest possible level of remuneration that an employer can pay to an employee for his work. In the world there are basically two mechanisms of the minimum wage settings. The first is determination of the minimum wage by law (the legal regulation) and it is called the statutory minimum wage. The statutory minimum wage can be applied either to all sectors or selectively only to certain sectors. The second mechanism is the setting of minimum wages by collective agreements. They could be collective agreements at the company level or higher level collective agreements, i.e. applied to certain sectors or particular professions [2]. It is common that in addition to the basic rate of minimum wages, there are special reduced rates, such as for young workers or for persons with disabilities. Within the European Union, all Member States apply some form of minimum wages. Most of them (twenty) use the statutory minimum wage and other Member States determine the minimum wage by collective bargaining.

The minimum wage is the measure of economic policy which raises conflicting views. Opponents of the minimum wage mostly emphasize its negative impact on employment and often disagree with its social function. On the contrary, its proponents emphasize its importance in the fight against poverty, in the creation of incentives to work, in reducing the imbalances in labour relations (limiting the power of employers) or in reducing wage inequality between the bottom and middle of the income distribution [9]. Some proponents of the minimum wage also question the negative impact of minimum wages on employment and even state that, under certain conditions, the minimum wage could lead to employment growth. Finally, proponents of the minimum wage indicate that the minimum wage in today's globalized world can prevent wage and social dumping [18, p. 3].

For the first time the minimum wage was introduced in New Zealand and Australia in the 1890's. In the Australian state of Victoria, the law on minimum wage was approved in 1896, under which the labour authorities were created that defined the lowest wages for five selected "sweated" industries. One of these industries in the state of Victoria was the textile industry, in which workers often created production outside the premises of the employer (e.g. at home). The United Kingdom adopted similar law in 1909. In 1938, under the Fair Labour Standards a minimum wage was enacted in the United States. In its early days, the institute of a minimum wage was introduced as a measure for the eradication of poverty in the "sweated" industries. Gradually, however, the applicability of the minimum wages widened. E.g. Canada and New Zealand gradually increased the force of the minimum wage from some sectors to almost all industry at the beginning of the twentieth century.

Since its introduction in 1991, the minimum wage has undergone several stages of development in the Czech Republic. In some periods the minimum wage was increased, and in some periods it stagnated. This uneven development has had an impact on the labour market. One of the objectives of this article is to describe the development of the institute of the minimum wage in the Czech Republic. Attention will be given not only to the gross nominal minimum wage, but also the development of the real and the net minimum wage. The second objective of the article is to assess whether the minimum wage fulfills its motivational function, i.e. if it pays for people to work or if it is better to live on social benefits. The final part of the article is devoted to an analysis of the impact of changes in the minimum wage on unemployment in the Czech Republic. In addition to the impact of changes in minimum wages on total

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unemployment, the impact of unemployment of young people and people with disabilities will also be examined.

1. The Minimum Wage in Professional Literature

Considerable attention is devoted to the minimum wage in world literature. The first scholarly articles appeared shortly after the first introduction of a minimum wage in the 19th and 20th century. The extending of the minimum wage in the United States gave further impetus to the scientific literature. From the beginning, economists' views on the minimum wage have differed. As Leonard says in his article, the main proponents of the minimum wage were then prominent economists such as Ely, Commons, Henry Rogers Seager, Sidney Webb and John B. Andrews. In contrast, the opponents of the minimum wage were Alfred Marshall, John Bates Clark, Frank Taussig, Phillip Wickteed and A. C. Pigou [10, p. 699]. Opponents of the minimum wage have come from assumptions of neoclassical economics, which show that the increase in the minimum wage must necessarily lead to a decline in employment [13, p. 7]. British economist Sydney Webb refused this simple neoclassical model and pointed out the relationship between the minimum wage and labour productivity of recipients of the minimum wage [19, p. 983]. In Webb's approach can be found common features with the theory of efficiency wages, which is a part of the new Keynesian economics [16, p. 288]. In 1940's, George Stigler and Richard Allen Lester were the key participants of a dispute regarding the impact of the minimum wages on employment. Stigler, on the basis of neoclassical approach, concluded that a stronger increase in employment cannot be achieved by legislation, and the introduction of the minimum wage always causes, in his opinion, growth of unemployment [1, p. 360]. Lester on the contrary, did not see the minimum wage as a key factor of reducing employment: "Market demand is more important than the wage rates in determining the amount of employment in the company" [11, p. 81]. In the following period, it seemed that a certain consensus that the minimum wage has a negative impact on employment had been achieved among economists. The article by Charles Brown, Curtis Gilroy and Andrew Kohen from 1982 provides an overview of scientific papers from this period. The article by Card and Krueger from 1994, entitled "Minimum Wage and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania," significantly enhanced expert debate on the impact of minimum wages on employment. In this article, the authors compared the impact of an increase in the minimum wage on employment in fast-food restaurants. In 1992 there was an increase in the minimum wage in the State of New Jersey, while in neighboring Pennsylvania, the minimum wage had not changed. The authors concluded that they had found no evidence that increasing the minimum wage in New Jersey reduced employment in fast-food restaurants in this state in comparison with Pennsylvania [4, p. 792]. Both authors carried out further studies, which show that the minimum wage had a positive impact on employment [5, pp. 389-390]. Neumark and Wascher in his book Minimum Wage criticized the results of studies by Card and Krueger and stated that their own studies as well as studies of other authors clearly confirm the negative impact of minimum wages on employment [14, p. 104].

In Czech literature, the majority of scientific texts are particularly devoted to the description of the minimum wage and to a limited extent, more detailed econometric analysis of the impact of minimum wages on the labour market and wage differentiation can be found. One of the reasons is the unavailability of data and the relatively short time series. In this context it should be noted that the minimum wage, as discussed below, remained unchanged from 2007 until August 2013, which essentially prevents a recent econometric estimate of the impact of minimum wages on employment. For a long time, Baštýř focused his attention on the issue of minimum wage in the Czech Republic. For example in his study he argued against discussed possibility of differentiating the minimum wage in the Czech Republic by region [2, p. 12]. In another study, on the contrary, Baštýř urged a debate over the minimum wage differentiation within the higher level collective agreements [1]. The study by Gottwald et al. analysing the evolution of minimum wages in 1998–2000 concluded that the impact of the minimum wage on Czech labour market is low and insignificant [8]. Fialová tried to verify, with data 1991–2003, if the growth of the minimum wage increased employment and total income of poor households. According to the author, the increase of the minimum wage in this period did not lead to an increase in labour income of poor households, and even in the case of the total income, the minimum wage did not significantly contribute to its increase. Fialová also concluded that the increase of share of the minimum wage to average wage had a significant impact on the increase in unemployment in the regions. However, as the author herself stated, estimates of the elasticity are not very robust because they are sensitive to the inclusion of particular variables [7, p. 29]. A similar negative impact of increasing the minimum wage on unemployment in the region found in his article Fialová and Mysíková. According to the authors, if the share of minimum wage to the average wage in the region increases by 1%, the unemployment rate will increase by 0.3 to 0.7%. Estimates of elasticities, however, were again not too robust [6].

2. The Minimum Wage in Czechoslovakia and the Czech Republic

The Minimum Wage before 1989

The institute of the minimum wage began to expand in Europe at the beginning of the last century. Decrees of the Minister of trade, warfare and welfare of the Austro-Hungarian Empire about wages for sewing textile goods by order of the army, which were amended several times, represents the first forms of minimum wage at the Czech territory. Under these regulations, the minimum wage depended on the type of clothing and also on the place of work. Independent Czechoslovakia did not establish a minimum wage, which would cover all employees. However, shortly after the establishment of an independent state, several proposals to introduce a general or at least a professional minimum wage was submitted. One of the proposals to the National Assembly in January 1919 was submitted by Member of Parliament Mečíř and his colleagues, which pointed out that the foundation of Czechoslovakia would not only be freedom but social justice as well. In response to the poor living conditions of home workers (i.e. that which worked outside the premises of the employer), in September 1919, the National Assembly passed the law which was prepared by Minister for Social Welfare Dr. Winter [21]. In the preamble to the Act, Dr. Winter said that there was a decline in wages as part of the price undercutting at home workers sector. On the basis of the Act, central committees were formed, whose main task was to determine wage rates. In the newly created Czechoslovakia a minimum wage was only established for home workers.

After the World War II, the minimum wage in Czechoslovakia did not exist, despite the fact that the Czechoslovak Socialist Republic ratified the Conventions of International Labour Organization on the minimum wage. Convention No. 26: Minimum Wage-Fixing Machinery Convention was ratified by Czechoslovakia on the 12th June 1950 and Convention No. 99: Minimum Wage Fixing Machinery (Agriculture) Convention on 21st January 1964. Conventions no. 26 and 99 was ratified by independent Czech Republic on the 1st January 1993. The third Convention of the International Labour Organization No. 131: Minimum Wage Fixing Convention, from 1970 was not ratified by Czechoslovakia and then the independent Czech Republic.

The Minimum Wage after 1989

The minimum wage was introduced in Czechoslovakia in 1991. The current minimum wage is regulated by § 111 of Act No. 262/2006 Coll., The Labour Code, as amended and Government Decree No 567/2006 Coll. stipulating minimum wage rates and premiums for work under dangerous conditions and for work at night, as amended. According to the Labour Code, the minimum wage is "... the lowest permissible level of remuneration in employment relationship…" [20, § 111]. It is obvious that the minimum wage is not valid only for traditional employment contracts in the business or non-business sector, but also for relations based on agreement to complete a job or on agreement to perform certain work. In organizations in which collective bargaining on wages is carried out, the minimum wage may be fixed at a higher level than the statutory minimum wage. In the case of such organizations in which collective bargaining on wages does not take place in determining the amount of the minimum wage or remuneration agreements, a guaranteed level of wages is applied in addition to the minimum wage. In non-business organizations in which employees are salaried, in addition to the minimum wage and guaranteed levels of wages, a system of wage tariffs are applied [20, § 112].

Since the introduction of the minimum wage in 1991, there were 16 amendments of its amount. Monthly and hourly rates of nominal gross minimum wages are shown in Table 1. Three periods of development of the minimum wage in the Czech Republic can be described since 1991.

The first period is bounded by the years 1991 and 1998. Within this period, the minimum wage was increased four times. The monthly minimum wage increased from 2,000 to 2,650 CZK, i.e. 650 CZK or 32.5%. The average annual rate of increase in the minimum wage was 3.6% in this period. Increases in the minimum wage during this period can be described as very low with respect to the price level and the average wage. The significance of the minimum wage, in particular of its social role, declined during this period. Explanation of relatively low growth of the minimum wage in the first period is associated with the political orientation of the then Czech government. Right-wing conservative governments are mostly sceptical of the institute of the minimum wage. The minimum wage is understood as a distortion of the market mechanism for setting wages, which is associated with rising unemployment.

The second period can be defined from 1999 to 2006. It was a period during which there were regular increases in the minimum wage, usually with effect from 1 January of the year (there were also increases in the minimum wage from July of 1999, 2000 and 2006). The total monthly nominal wage increased by 5,305 CZK between 1999 and 2006, i.e. an increase of more than 200%. When adjusted for one year, the average growth rate of nominal minimum wage was about 14.7%, which was more than 11 percentage points more compared to the first period. The second period is characterized by a leftist orientation of Czech governments (with the exception of the government of Prime Minister Tošovský). The raising minimum wage led again to a renewal its social and motivational functions. In the previous period, the minimum wage had fallen below the living minimum of independently living individuals, thus the motivation to look for a job or keep a job was reduced. The gradual increase in the minimum wage reversed this negative development. The importance of the minimum wage in the second period is evident from the fact that the minimum wage was mentioned in the program declarations of governments during this period, when the Czech government also adopted the Social Charter of the Council of Europe, which also includes the right to remuneration ensuring a decent standard of living for workers and their families.

The third period is the period between 2007 and 2012. In January 2007, the monthly nominal minimum wage was increased by 55 CZK up to 8,000 CZK. The Czech government did not increase the nominal minimum wage for more than five years, which was unique within the European Union. The motivational and social function of the minimum wage gradually decreased during this period.

Lastly, the monthly minimum wage was increased by 500 CZK or by 6.25% from August 2013. It seems that a new period of development of the minimum wage begins from that year, as the newly created government declared its intention to further increase the minimum wage.

In addition to the basic minimum wage, reduced rates for young employees and employees who are eligible for disability retirement existed until the end of 2012. Since January 2013 these reduced rates were revoked and there was only a basic minimum wage. Reduced rates were applied due to the lower labour productivity of listed groups. The cancellation of reduced rates of minimum wages reflected the desire for equal status of persons with disabilities and youth in remuneration. Low willingness of employers to employ people with disabilities has led to the fact that the minimum wage for people with disabilities has not changed since August 2013. Or, in other words, there is a reduced rate for people with disabilities (8,000 CZK) in addition to the basic rate of minimum wages (8,500 CZK) again now.

Tab. 1: The development of the gross nominal minimum wage in the Czech Republic

Valid from (the 1st day of month)		Monthly minimum wage (CZK)	Hourly minimum wage (CZK)
1991	February	2,000	10.80
1992	January	2,200	12.00
1996	January	2,500	13.60
1998	January	2,650	14.80
1999	January	3,250	18.00
	July	3,600	20.00
2000	January	4,000	22.30
	July	4,500	25.00
2001	January	5,000	30.00
2002	January	5,700	33.90
2003	January	6,200	36.90
2004	January	6,700	39.60
2005	January	7,185	42.50
2006	January	7,570	44.70
	July	7,955	48.10
2007	January	8,000	48.10
2013	August	8,500	50.60

Source: [12]

3. Trends in the Minimum Wage in the Czech Republic and Its Relation to Some Socio-Economic Variables

Development of the Nominal and Real Minimum Wage

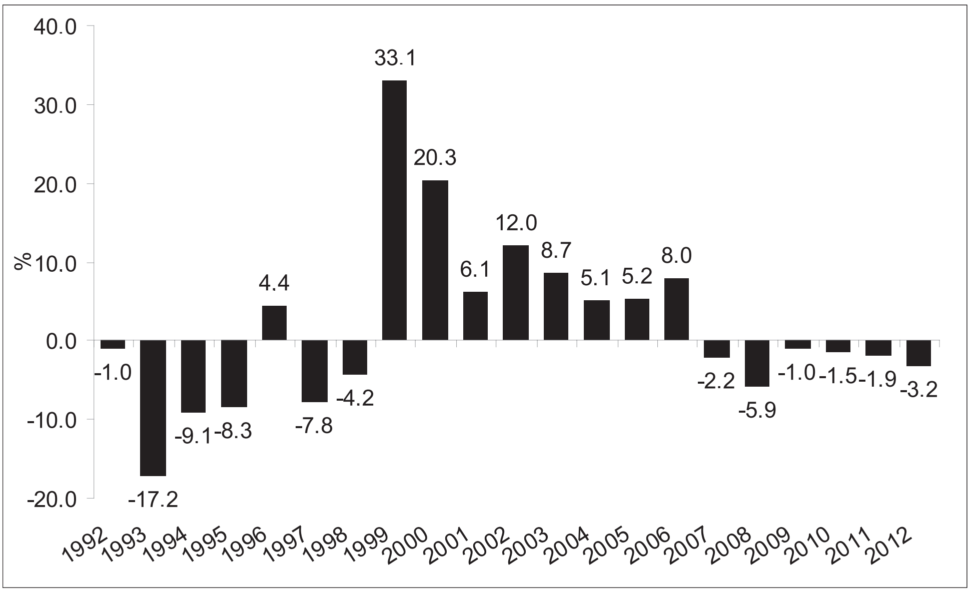
In addition to the development of nominal wage, it is necessary to consider also the development of its purchasing power. Figure 1 shows the development of real minimum wage.

The starting amount of the monthly minimum wage was set to 2,000 CZK in 1991. During the first period (1991–1998) the government increased it in only three years: 1992 (10%), 1996 (13.6%) and 1998 (6%). However, the price level increased annually, with the highest increase of 20.8% in 1993 thanks to the effect of the value added tax introduction. In the other years of the first period, the inflation rate ranged from 8 to 11%. The first period is therefore possible to characterize by the decrease in purchasing power of the minimum wage (except for 1996). It is evident that the social function of the minimum wage during this period decreased gradually. In 1998, the minimum wage amounted to only 63% of its purchasing power in 1991.

The second period, between 1999 and 2006, is characterized by rapid increases in monthly minimum wage. The minimum wage increased every year and in three years (1999, 2000, 2006) even twice a year. Overall, the growth in minimum wage exceeded the price level in this period and the government managed to eliminate the decline in real minimum wage in the previous period. The nominal minimum wage in this period increased on average by 14.7%, while the average annual increase in the price level was only about 2.5%. With the rapid growth of the nominal minimum wage its real value gradually increased and in 2006 reached 156% of its value from 1991.

The third period, 2007–2012, is characterized by a decline in the real minimum wage. The government raised the monthly nominal minimum wage only by 0.56 % (or by 55 CZK) in year 2007. In the remaining years, the nominal minimum wage remained unchanged and amounted to 8,000 CZK. The average annual increase in the price level in the third period was 2.8%. The largest decline in the real minimum wage was in 2008 (-5.9%), when the price level rose quickly, by 6.3%, due to some measures taken in connection with the reform of public finances (an increase of reduced VAT rate from 5% to 9% and the introduction of regulatory health care fees) and due to the increase in food prices and regulated energy prices. Therefore, there was an increase in prices, especially those items of the consumer basket, which are dominant in the spending of low wage earners, in which recipients of the minimum wage can be included. During the third period, the purchasing power of the minimum wage gradually decreased, and in 2012 it amounted to only 137% of its value in 1991.

Fig. 1: Real changes of the minimum wage in the Czech Republic



Source: own calculation

Gross and Net Minimum Wage

Besides the development of the price level, the amount of goods and services that the minimum wage beneficiary can obtain for it is also influenced by developments in the field of taxation. The actual tax rate, the amount of deductibles and development of rates of health and social insurance play their role. Social security contributions paid by employees include sickness insurance, pension insurance and contribution to the state employment policy. Household composition also has a significant impact on the net minimum wage. A number of model cases for further analysis can be found, however, in this paper two cases will be used. The first case will be an employee who is unmarried and has no dependent children. The second case is a single employee with one dependent child. It can be assumed that the typical recipient of the minimum wage will be represented by one of these cases.

Until 1992 there was only the payroll tax, which was regulated by Law No. 76/1952 Coll [22]. For employees without children and with one child, the standard rate was increased by 60%. In 1993 there was a tax reform, under which a progressive personal income tax (6 bands from 15% to 47%) was introduced and a system of tax deductible items (among others for a taxpayer and for a child) was introduced too. Due to the tax reform, the only decline in net minimum wage occurred in 1993. For employees without dependent children the net minimum wage decreased by 2% and for the employees with one dependent child by 0.5%. The existence of child allowance was a cause of a lower decrease in the net minimum wage for employees with one child. In the following years, there were increases in the basic allowance for the taxpayer and the child allowance and also decreases in the total insurance rates paid by employees. Because of these, the net minimum wage increased more than the gross minimum wage.

In 2005 there was a significant change: child allowance was exchanged for a child credit, in the amount of 6,000 CZK per year. Tax credits are deducted directly from the calculated tax, not from the tax base as in the case of deductible items in previous years. Moreover, if the tax credit exceeds the tax liability of the taxpayer, there is a tax bonus for which taxpayer can apply for under the conditions set by law. In 2006, the tax credit directly for the taxpayer itself was established. In this case, however, there is no tax bonus. Tax credits on the taxpayer's and especially per child were increased in some subsequent years, which led to the growth of the net minimum wage even in years in which the gross minimum wage did not change. It is worth mentioning that since 2008, so-called super gross wage and credits per taxpayer and child have been introduced, thus again the minimum wage in the net increased.

Tab. 2: The gross and net minimum wage in the Czech Republic

	Gross minimum wage	Net minimum wage of employee without child	Net minimum wage of employee with one child
1991	2,000	1,597	1,597
1992	2,200	1,912	1,912
1993	2,200	1,873	1,903
1994	2,200	1,888	1,903
1995	2,200	1,909	1,909
1996	2,500	2,187	2,187
1997	2,500	2,187	2,187
1998	2,650	2,318	2,318
1999	3,600	3,114	3,150
2000	4,500	3,782	3,938
2001	5,000	4,194	4,375
2002	5,700	4,715	4,988
2003	6,200	5,087	5,381
2004	6,700	5,458	5,778
2005	7,185	5,818	6,319
2006	7,955	6,725	7,225
2007	8,000	6,760	7,260
2008	8,000	7,000	7,890
2009	8,000	7,120	8,010
2010	8,000	7,120	8,087
2011	8,000	7,120	8,087
2012	8,000	7,120	8,237
2013 (August)	**8,500**	**7,565**	**8,682**

Source: [12], own calculation

The gross monthly minimum wage did not change from 2007 to 2012 and was 8,000 CZK. In the case of an employee without dependent children, the net monthly minimum wage did not change in the period 2009–2012 and was 7,120 CZK. In the case of employee with one dependent child, the net monthly minimum wage increased to 8,237 CZK in 2012, which was more than the gross monthly minimum wage. This particular "paradox" was caused by the existence of a tax bonus for child. The increase in gross minimum wage in August 2013 led to a corresponding increase in the net minimum wage as well.

From the calculated values in the Table 2 it is clear that in the year of the minimum wage introduction, beneficiaries of the minimum wage pay about 20% of their wage in the form of tax and insurance. In the following years, the share of net to gross minimum wage increased and stabilized at 86–87.5%. Since 1999, however, in the case of an employee without dependent children, this share began to decline and reached its lowest level in 2005, when the net minimum wage was only 81% of the gross minimum wage. For the employee with one child, the share of net minimum wage to gross minimum wage, with the exception of a slight decline in the years 2003–2004, remained basically unchanged and amounted to about 87.5% till 2005. In 2008–2012, there was no change of gross monthly minimum wage, but in the case of employee with one dependent child, the proportion of the net minimum wage to the gross minimum wage increased due to adjustments in taxation and insurance. In 2009, the net minimum wage exceeded the gross minimum wage in the case of employee with one dependent child, which was due to the existence of the tax bonus per child. Since August 2013, the share of the net minimum wage to gross minimum wage for an employee with one dependent child is 102%. An employee without a dependent child pays 11% of their gross salary in the form of income tax and insurance since August 2013.

Motivational Function of the Minimum Wage

To assess whether the minimum wage is set up to encourage the recipient to work, or at least to seek employment, the net minimum wage is very often compared to the living minimum. In order to fulfil its motivational function, the net minimum wage must be sufficiently higher than the living minimum. Only slightly higher minimum wage than the living minimum is not sufficient to ensure that the recipient will look for a job or be willing to keep a current job. Jobs are related to some other costs that cannot be essentially aggregately quantified, such as the cost of transport to job, loss of leisure time value, etc. In this context, it is necessary to mention that the living minimum included the amount needed to sustenance and other basic personal needs and the amount needed to cover necessary expenses connected with housing. Since 2007, however, an amount necessary to cover the cost of housing is not a part of the living minimum. These costs are included in the housing allowance. In the analysis, a variety of model situations can be used. The living minimum is affected by the number of people in the household and by the age of children. Also, the housing allowance depends on the number of people in the household and on the age of children, but in addition also on whether the household lives in a rental or cooperative (or own) flat, and also on the size of the city.

The Table 3 shows how the net minimum wage deviates from the living minimum plus the housing allowance for an employee without dependent children and for an employee with one dependent child aged 10 to 15 years. The situations when the household lives in Prague or in a small town up to 9,999 inhabitants are compared. Note: For more details with general wage developments in the regions deals Zdeněk et al [23]. The cases when the household has a rental flat, a cooperative flat, or their own flat are compared in both situations (In the model cases, it is not taken into account that the housing allowance is provided for a maximum).

From the Table 3 it is obvious that in the case of a household without a dependent child the living minimum exceeded the net minimum wage since the introduction of the minimum wage in 1991 until 1999. In this period there was no difference between households living in Prague and in a small town, or between rental and cooperative flat. The rapid increase of the gross minimum wage between 1999 and 2006 and the partial adjustment of the tax on personal income and insurance led to the fact that the motivation to look for a job gradually strengthened in the case of households with no dependent children. The stagnation of the gross minimum wage and the slight impact of tax and insurance adjustments on the net minimum wage in the following years, associated with the rapidly growing housing allowance, led to a gradual decline in excess of the net minimum wage against the living minimum, which was increased by a housing allowance for single households without dependent children. In the case of a person living in a rental flat in Prague, the living minimum plus housing allowance has exceeded the net minimum wage since 2010. In this situation, an employee without dependent children and living in a rental flat in Prague who receives or would have received a minimum wage would gradually lose the motivation to maintain his job or to find a new job. If a person without dependent children lived in a small town or in a cooperative or a private flat in Prague, the net minimum wage has been exceeding the living minimum (including housing allowance) for long term. Since 2006, however, this surplus has been gradually decreasing. The increase in the gross minimum wage from August 2013 slightly heightened the motivation to seek a job in the case of individuals without dependent children in a small town.

Tab. 3: A comparison of the net minimum wage and the living minimum (including housing allowance)

	Employee without child				Employee + child (10 to 15 years)			
	rental flats		co-op., own flat		rental flats		co-op., own flat	
	Prague	less than 9,999 inhab.	Prague	less than 9,999 inhab.	Prague	less than 9,999 inhab.	Prague	less than 9,999 inhab.
1991	-103	-103	-103	-103	-1,303	-1,303	-1,303	-1,303
1992	212	212	212	212	-988	-988	-988	-988c
1993	-87	-87	-87	-87	-1,417	-1,417	-1,417	-1,417
1994	-272	-272	-272	-272	-1,757	-1,757	-1,757	-1,757
1995	-531	-531	-531	-531	-2,151	-2,151	-2,151	-2,151
1996	-703	-703	-703	-703	-2,553	-2,553	-2,553	-2,553
1997	-853	-853	-853	-853	-2,793	-2,793	-2,793	-2,793
1998	-1,112	-1,112	-1,112	-1,112	-3,162	-3,162	-3,162	-3,162
1999	-316	-316	-316	-316	-2,330	-2,330	-2,330	-2,330
2000	12	12	12	12	-1,942	-1,942	-1,942	-1,942
2001	94	94	94	94	-1,955	-1,955	-1,955	-1,955
2002	615	615	615	615	-1,342	-1,342	-1,342	-1,342
2003	987	987	987	987	-949	-949	-949	-949
2004	1,358	1,358	1,358	1,358	-552	-552	-552	-552
2005	1,518	1,518	1,518	1,518	-251	-251	-251	-251
2006	2,305	2,305	2,305	2,305	495	495	495	495
2007	1,389	2,112	2,492	2,336	-812	232	752	510
2008	786	2,065	2,315	2,159	-1,347	374	689	447
2009	0	1,767	1,979	1,823	-2,516	-125	145	-97
2010	-789	916	1,732	1,576	-3,558	-1,244	-121	-363
2011	-1,275	639	1,365	1,209	-4,242	-1,651	-643	-885
2012	-2,165	354	850	680	-5,339	-1,923	-1,237	-1,501
2013	-2,311	513	782	782	-5,764	-1,900	-1,571	-1,571

Source: own calculation

In the case of a two-person household with one dependent child aged 10 to 15 years, the net minimum wage was only higher than the living minimum plus housing allowance for all considered situations in 2006, and in some situations in 2007–2009. This was mainly due to the adjustment of tax credits and the partial adjustment of insurance rates. In all other years, it is clear that for two-person households in which one dependent child is aged 10 to 15 years, the setting of the minimum wage demotivated people from finding a new job or keeping a current job.

4. Impact of the Minimum Wage on Unemployment

Considerable attention to the impact of the minimum wage on employment and unemployment is devoted in the world and partly in the Czech professional literature as well. Empirical studies do not provide clear conclusions. In the Czech Republic, the analysis of the impact of the minimum wage on unemployment is additionally complicated by the fact that the minimum wage was not changed for a relatively long period. In spite of this limitation, a statistical analysis of the impact of raising the minimum wage on the unemployment rate will be made in this part. In addition to the impact of a rise of the minimum wage on overall unemployment, the impact on young people and people with low levels of education, who are more likely to receive the minimum wage, will be examined as well. Overall unemployment is perceived as unemployment of labour force aged 15 to 64 years in this article. Youth unemployment will be examined in the group aged 15–24 years and unemployment among people with low education will be examined in the group of people with education levels 0–2 (according to ISCED-97; ISCED 0 – Pre-primary education, ISCED 1 – Primary education and ISCED 2 – Lower secondary education).

For testing in all three cases a simple linear model of the dependency of the unemployment rate on the minimum wage cannot be used. First the data are partly non-stationary of degree 1 according to standard ADF test. The only variable which is I(0) is the nominal wage. Using the first differences in logarithms for these variables would solve this problem. Second the unemployment rate (and its dynamics as well) is highly dependent on other factors, especially on the real output growth. This variable must be included in the model to control for this dependency. Moreover there is no strong collinearity between the growth of minimum wages and output growth which allows us to include both variables simultaneously. Third we found strong autocorrelation of unemployment growth rate at first lag which means we should include a lagged unemployment rate growth term in our estimate. Fourth for all three cases which were analyzed residuals were autocorrelated when the LM serial correlation test was applied. We therefore decided to add the AR(1) term for residuals as well for the final model.

Generally, the final semi-growth LVAR model to be estimated can be expressed by the equation:

$$\mathrm{dlog}(u_t) = b_0 + b_1\, log(mw_t) + b_2 d\, log(u_{t-1}) + b_3 dlog(y_t) + \varepsilon_t$$

$$\varepsilon_t = \rho\varepsilon_{t-1} + \mu_t \tag{1}$$

Where u_t – is the unemployment rate in a given quarter, MW_t – is the nominal minimum wage in a given quarter, u_{t-1} – is the unemployment rate in the previous quarter, y_t is GDP in constant (2005) prices in a given quarter and c – is a level constant. The differences of logarithms approximate growth rates, residuals contain the AR(1) process.

To analyze the dependence between the dynamics of unemployment and minimum wage, yearly growth rates for 1998–2011 on quarterly basis are used. Data for the unemployment rate come from the Labour Force survey, which is published by Eurostat. UTOT stands for the case of the total unemployment rate, U15 for the unemployment rate of young people in age 15–24 and UEDU for the unemployment rate of people with low education.

The Minimum Wage and Overall Unemployment

The results of the statistical analysis of the relationship between growth in the minimum wage and growth in the overall unemployment rate are presented in table 4. We clearly see that the minimum wage is statistically insignificant which means, that raising the minimum wage has no effect on growth of unemployment rate in the Czech Republic. On the other hand the link between unemployment and output growth is quite accepted by conventional wisdom – output acceleration leads to lower unemployment. Moreover we see that unemployment is autocorrelated as assumed which means that higher unemployment dynamics leads to higher dynamics in the future which is again in line with standard economic theory (hysteresis and two-way causality between unemployment and output growth).

Tab. 4: Estimation of equation no. 1 for the relation between the minimum wage and the total unemployment rate

Dependent Variable: DLOG(UTOT,0,4)

Method: Least Squares

Sample (adjusted): 1999Q3 2011Q4

Included observations: 50 after adjustments

Convergence achieved after 12 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(MW)	-0.027501	0.120822	-0.227619	0.8210
DLOG (Y,0,4)	-0.029850	0.006329	-4.716373	0.0000
DLOG(UTOT(-1),0,4)	0.584211	0.104015	5.616578	0.0000
C	0.322263	1.071148	0.300858	0.7649
AR(1)	0.737435	0.140827	5.236452	0.0000

R-squared	0.941965	Mean dependent var	-0.010425
Adjusted R-squared	0.936806	S.D. dependent var	0.190087
S.E. of regression	0.047785	Akaike info criterion	-3.149585
Sum squared resid	0.102752	Schwarz criterion	-2.958382
Log likelihood	83.73962	Hannan-Quinn criter.	-3.076774
F-statistic	182.5989	Durbin-Watson stat	2.206213
Prob(F-statistic)	0.000000		

Source: own calculation using EViews

The Minimum Wage and Unemployment of Young People

The results of the statistical analysis of the relationship between growth in the minimum wage and growth in the rate of unemployment among young people are presented in the table 5. From our results it appears again that there is no significant effect of the minimum wage on the unemployment dynamics of this group. Regarding the other explanatory variables, we see a higher effect of output growth on unemployment and only a very slightly lower effect of lagged growth in the unemployment rate. We may conclude that this group is more sensitive to changes in economic performance, i.e. recession will harm this group more than others.

Tab. 5: Estimation of equation no. 1 for the relation between the minimum wage and the unemployment rate of young people

Dependent Variable: DLOG(U15,0,4)

Method: Least Squares

Sample (adjusted): 1999Q3 2011Q4

Included observations: 50 after adjustments

Convergence achieved after 12 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(MW)	-0.027322	0.119208	-0.229195	0.8198
DLOG (Y,0,4)	-0.036865	0.009486	-3.886292	0.0003
DLOG(U15(-1),0,4)	0.533803	0.138654	3.849894	0.0004
C	0.359999	1.057875	0.340303	0.7352
AR(1)	0.582046	0.192816	3.018669	0.0042

R-squared	0.905532	Mean dependent var	0.009570
Adjusted R-squared	0.897134	S.D. dependent var	0.237114
S.E. of regression	0.076049	Akaike info criterion	-2.220241
Sum squared resid	0.260254	Schwarz criterion	-2.029039
Log likelihood	60.50603	Hannan-Quinn criter.	-2.147430
F-statistic	107.8375	Durbin-Watson stat	2.087417
Prob(F-statistic)	0.000000		

Source: own calculation using EViews

The Minimum Wage and Unemployment of People with Low Levels of Education

The results of the statistical analysis of the relationship between growth in the minimum wage and growth in the unemployment rate of people with low levels of education are in the Table 6. It is obvious that again the impact of the minimum wage on unemployment is insignificant. From the other variables' point of view, we see that this group of people is less sensitive to changes in output growth than others, but there is still a negative relation between output growth and unemployment dynamics. On the other hand, we see high dependency on lagged values of unemployment. This can be explained by the higher probability of these people to stay unemployed for a longer time – their hysteresis is probably higher than in other groups.

Tab. 6: Estimation of equation no. 1 for the relation between the minimum wage and the unemployment rate of persons with low levels of education

Dependent Variable: DLOG(UEDU,0,4)

Method: Least Squares

Sample (adjusted): 1999Q3 2011Q4

Included observations: 50 after adjustments

Convergence achieved after 7 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(MW)	-0.024914	0.057641	-0.432224	0.6676
DLOG (Y,0,4)	-0.016220	0.004701	-3.450343	0.0012
DLOG(UEDU(-1),0,4)	0.614742	0.142450	4.315490	0.0001
C	0.277144	0.513227	0.540002	0.5919
AR(1)	0.383901	0.220864	1.738178	0.0890

R-squared	0.858718	Mean dependent var	0.022765
Adjusted R-squared	0.846160	S.D. dependent var	0.133244
S.E. of regression	0.052261	Akaike info criterion	-2.970476
Sum squared resid	0.122907	Schwarz criterion	-2.779274
Log likelihood	79.26191	Hannan-Quinn criter.	-2.897665
F-statistic	68.37804	Durbin-Watson stat	2.166429
Prob(F-statistic)	0.000000		

Source: own calculation using EViews

Conclusions

The minimum wage in the Czech Republic was established in 1991 and since then, the government has changed its amount 16 times. In the first years after the introduction of the minimum wage, the minimum wage was increased slower than the increase in the price level, and therefore the real minimum wage decreased. In the period 1999–2006 the government increased the minimum wage faster than the price level increase. Since 2007, however, due to the stagnation of the minimum wage, the real minimum wage has declined. The purchasing power of the minimum wage was in addition to the price level also affected by adjustments of the rates of taxes and social and health insurance. As a result of these adjustments, the net minimum wage increased in some cases, even though the gross minimum wage stagnated. This was true especially in the case of the recipient of the minimum wage with a dependent child.

If the minimum wage is sufficiently higher than the living minimum, the minimum wage fulfils its motivational function. The analysis shows the net minimum wage has been lower than the living minimum in recent years in the case of a person with one dependent child. For these persons it is therefore more favourable to rely on social benefits than to seek a job. The same is also true for a person without dependent children who lives in a rental flat in Prague.

From the analysis it is clear that the relationship between changes of the minimum wage and changes in the unemployment rate in the Czech Republic is inconclusive. No statistically significant relation between unemployment dynamics and minimum wage could be found. To conclude, raising the minimum wage will probably have no negative effect on unemployment. This holds true for general unemployment but also for the unemployment of low educated and young people. On the contrary, our analysis has shown a clear effect of output growth on unemployment dynamics. We can see different reactions among selected groups as unemployment of young people seems to be quite sensitive to output growth. Also a significant dependency on lagged growth of unemployment was found. This can be explained by well-known problem of hysteresis on the labour market. It was discovered that people with lower education in particular tend to exhibit a higher tendency to hysteresis.

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Abstract

SELECTED ISSUES OF THE MINIMUM WAGE IN THE CZECH REPUBLIC

Tomáš Pavelka, Marek Skála, Jan Čadil

The minimum wage is one of the measures of economic policy, which raises contradictory reactions. The Czech Republic is one of twenty EU Member States that have implemented a statutory minimum wage. Since its introduction in 1991, the gross minimum wage was increased sixteen times by the government. In addition to increases in the gross minimum wage, the purchasing power of the minimum wage is affected by the development of price levels and also by changes in tax and social security and health insurance. In the Czech Republic three periods in the development of the minimum wage can be distinguished. In the first years after its introduction, the gross minimum wage did not increase significantly and its real value declined. The period 1999–2006 is a period of rapid growth in both the nominal and the real minimum wage. In the period 2007–2012, the nominal wage was constant and its real value gradually decreased. These three phases correspond to the political orientation of Czech governments. Leftist governments raised minimum wages faster than right-wing governments. The article also provides an analysis of the motivational function of the minimum wage. It compares the net minimum wage with the living minimum. It appears that the motivational function of the minimum wage has been reducing in recent years. This is true especially for persons with dependent children. The last part of the article includes an analysis of the relationship between the increase in the minimum wage and the unemployment rate in the Czech Republic. In addition to total unemployment, the impact of the minimum wage on unemployment of young people and people with low levels of education is analyzed. It shows that there is no clear relationship between the minimum wage and the unemployment rates in the Czech Republic.

Key Words: *Employment, minimum wage, unemployment.*

JEL Classification: *J31, J38.*

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IMPACT OF GROUP INTERACTIONS ON FARMERS' ENTREPRENEURIAL BEHAVIOUR

H.R.M.P. Abeyrathne, L.N.A.C. Jayawardena

Introduction

Amidst the diversity of approaches to examine it, one can find different definitions for entrepreneurship. Drucker identified entrepreneurs as people who see "change" as the standard, and actively go looking for existing change in order to exploit it [13]. There is a long history of economic research on entrepreneurship. In 'Theory of Economic Development' Schumpeter viewed the entrepreneur as an agent of change that is the source of his famous creative destruction [31]. Schumpeter identified an entrepreneur could be a single person, the country itself, or its agenda, can act as an entrepreneur [12]. He indicated that successful entrepreneurs elicit widespread imitation and it "presupposes a great surplus force over the everyday demand' [31]. In developing countries an entrepreneur is identified as a person who is self-employed, earns his living, establishes his business and has a status in society [14]. Webster's Dictionary [34] defines entrepreneurship as "creation of a new, innovative, profit oriented, visionary economic organization that exists in uncertain environments carrying some risk". In other words, an entrepreneur can recognize an opportunity, and add value through the resources. Empirical evidences suggest entrepreneurial behaviour as a function of the characteristics of the person and the environment [10]. Solanki and Soni [32] viewed that an entrepreneur may be differentiated not only in terms of the kind of activities he pursues but in the context of his life style, attitudes, values and behaviour contributing to the entrepreneurial personality. Findings suggest that entrepreneurship is conceived as a personal quality enabling individuals to make decisions with far reaching consequences, and success by acting differently from others. These results influence other people to change their mind too. Many contextual factors may exert an influence on entrepreneurial behaviour and success [37]. Entrepreneurs discover new sources of supply of materials and markets and they establish more effective forms of organizations and perceive new opportunities with super-normal will power and energy, essential to overcome resistance that social environment offers [32]. Entrepreneurs have been instrumental in initiating socio-economic development.

1. Entrepreneurship in Agriculture

Agricultural development facilitates a better living standard for farmers by producing more and selling more. Farming success tends to increase farmers' self-confidence. Increased contacts with merchants and government agencies would draw farmers into a closer acquaintance with the world beyond them [22]. Compared with other enterprises, agriculture has some unique problems, as it heavily depends on a biological relationship affected by the factors like climate, diseases, pests, storage, and fluctuation of price. An entrepreneur has little or no control over many of these factors. In the existing dynamic and competitive economic environment, collective efforts of farmers empower them with greater control [22]. Entrepreneurial behaviour of farmers has an impact on their profit making. Entrepreneurial behaviour depends on a number of factors like risk taking, feedback usage, persistence, hope of success, confidence, knowledge, manageability, achievement motivation, pursuability, and innovativeness [25]. Solanki and Soni [32] have identified 15 indicators of entrepreneurial behaviour viz; Decision making ability, Economic motivation, Market orientation, Knowledge of improved technology, Ability to coordinate available resources, Risk taking ability, Ability to solve problems, Credit orientation, Self-confidence,

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Scientific orientation, Communication skills, Experiences, Achievement motivation, Perceiving opportunities, and Perceiving management services. Chaudhari et al. [9] indicated entrepreneurial behaviour to be based on nine characteristics, viz. innovativeness, achievement motivation, decision making, risk orientation, co-coordinating ability, planning, information seeking behaviour, cosmopoliteness and self-confidence. And they developed an index to measure the entrepreneurial behaviour of dairy farmers. Mayer & Jencks [24] have indicated the profound influence of neighbouring peers on individuals throughout their life spans. Individual's entry to entrepreneurship (rely on theories of social norms and individual attitudes) posits that intentions precede entry and attitudes precede intentions [21].

1.1 Groups and Interactions

The value of a relationship is also defined by the social context around the relationship [6]. Marvin [23] defined a group as "two or more persons engaged in social interactions". In this situation each member of the group is aware of the other members and gets influenced by them and vice versa. Bass [3] called a collection of people as a group, if the existence of such collection was rewarding to its members. Woolcock and Narayan [38], and Padmaja and Bantilan [27] defined social capital as the "norms and networks that enable people to do collective actions". Goleman et al. were of the view that benefits of bonding social capital should be realized in intentional change by having a network of trusting, supportive, and mutually reinforcing relationships that facilitate one's efforts to change [17]. Social capital features in social organizations based on networks of interaction, and norms of reciprocity and trust facilitating coordination and cooperation for mutual benefit [29]. A review of social psychology literature shows that two types of group interactions exist in group processes, i.e. task, and social interactions, which coexist and are equally important to a group [8]. Conceptually, group functional activities of production overlap with group task interactions, whereas group functional activities of member support and group well-being overlap with group social interactions. The main characteristics of normative influence, such as group relationships, morality of care, seeking subjective virtue, group norms, preferences, maintaining harmony, etc., are essentially centered on relationships between group members or needs/ preferences of members [2]. Interpersonal relations are the important aspects of social life and it is easily achieved at group situations [15]. A group has been identified as a stage where members meet and negotiate personal interests [23]. And some members try to obtain power and status through groups and organizations. Padmaja and Batilan [27] were of the view that "behaviour of a person is governed by interactions and interrelations with other people". Pretty and Word [28] viewed factors such as age, education, gender, group size, heterogeneity of members, resourcefulness of members, and previous experience on collective actions, influence collective actions. However, Kruijssen et al. [22] reported that collective activities were always not possible in the resourceless farmer groups. Accordingly, lack of capital makes it difficult to maintain groups among poor farmers. Farmer groups reduce transaction cost, improve marketing facilities, reduce cost of cultivation, and facilitate other services [15]. Other benefits of farmer groups are; initiating and establishing culture of cooperation and coordination for their own benefits [24], conducting collective actions to overcome common problems [4], improving resource management strategies resulting in growth of local market and rural economy [4], developing networks among members and facilitate members to share ideas and find ways of mutual support. Farmers' groups have been found to help extension agents to improve member farmers' knowledge and practical skills of agricultural technologies [29]. Entrepreneurial action was found embedded in social interactions with other individuals [30]. Autio and Wennberg [1] revealed strong group-level effects on entrepreneurial behaviours. They found nearly 50% of the total variance in entrepreneurial behaviours resides between social groups, and not attributable to individual level characteristics. Further, the influence of group-level attitudes and social norms on individual level entrepreneurial behaviours was up to three times as strong as the influence of individual-level attitudes and norms. Above findings indicated that individual-level entrepreneurship to a greater degree is a reflection of group-level dispositions. It suggested the dominant, individual-centric and dispositional explanations of entrepreneurship are therefore, at best, incomplete.

1.2 Network Linkages

Social context is important for deeper understanding of entrepreneurship activities and the nature of involvements [35]. Johannison [19] identified a high degree of network linkages and ties in two rural regions in Sweden, indicating that in some circumstances the network may lead to direct support in raising finance, inter trading and cooperative efforts. In a Sri Lankan study, Wijekoon, and Jayawardena [36] found positive significant relationships 'between the use of information sources and personal factors, viz. age, social participation, degree of exposure to mass media, innovativeness, and risk orientation'. They identified fellow farmers to be the most available information source. Johannisson [19] pointed out that the entrepreneur is a networking person and that the personal network is the vehicle by which the established entrepreneur exchanges information while he acquires resources from the environment. In the conduct of a collaborative task, there are varying levels of interaction among group members. It has been found that main characteristics of informational influence such as information sharing, factual and task messages, rational decision model, etc., are reflected in task activities of asking for and giving information, suggestions, and directions [2]. Social interactions refer to particular forms of externalities, in which the actions of a reference group affect an individual's preferences. The reference group depends on the context and is mostly it consists of an individual's family, neighbours, friends or peers in social interactions. Creatively accessing social networks to mobilize financial and other resources needed for business creation and expansion has been observed in many studies [16], [18]. This theory addresses the effects that individuals have on others who come into contact with them. Interpersonal attraction theory [7] posits that individuals with similar beliefs are attracted to each other, thus reinforcing a shared set of attitudes and behaviours. Both these theories predict that individuals will have attitudes and behaviours similar to those with whom they interact. Identification of social capital opens a broader view towards social structures and processes, social values and norms. Significant differences have been found in East Asia in how social capital works in China and Vietnam, than in Japan or Korea [26]. Padmaja and Bantilan [27] have identified that, behaviour of a person is governed by interactions and interrelations with other people. The different ways how bridging networks contribute to entrepreneurial activities has been confirmed in empirical findings [5].

1.3 Scope of the Study

Empirical findings suggest the influence of group interactions in the entrepreneurial behaviour of farmers. However, there is a dearth of studies in examining the above using comparative groups of vegetable farmers practicing one season, and two seasons per year respectively. This study was focused on examining *'whether there is an impact from group interactions to improve entrepreneurial behaviour of farmers? and, what are the resulting effects?.'* General objective of the study was to examine the impact of group behaviour on the entrepreneurial behaviour of vegetable farmers. Specific objectives of the study were to identify, and assess the major entrepreneurial behavioural characteristics of farmers, and to examine the relationship between the group interactions and entrepreneurial behaviour of farmers.

2. Methodology

The epistemological approach for this research study was positivism. Accordingly the underline methodological aim was exposure. The research design consisted of two case studies, using two samples of vegetable farmers practicing respectively a single season, and two seasons (throughout the year) annually. The choice of above two types of farmer organisations was meant to capture the intricacies that farmers get exposed in farming continuously, and only during a defined period (single season) per year. These conditions are numerous, vary and involve differing socio-cultural connotations, especially in an Asian context. Accordingly, outcome of this study was focused on testing existing theory in different background conditions. Entrepreneurship practitioners, policymakers, and academics alike have shown a growing interest in the contextual factors in which entrepreneurial activities take place [33].

2.1 Operationalization of Research

Sri Lanka was selected for the study due to the availability of comparative groups of vegetable farmers practicing only a single season, and both seasons per year within geographically close by locations. Sri Lanka has 22 administrative districts. Matale district has been among the top 4 districts producing high amount of vegetables in Sri Lanka. Farmer organizations of Matale district in Sri Lanka was selected as the sampling frame of the study. Matale has over 220 farmer Organizations. An exploratory research to identify the farmer groups, and activities was conducted with the participation of community leaders and government Agricultural Instructors (AIs'). Accordingly, Naula, and Dambulla Divisional Secretariat (DS) areas were selected from the Matale district. Naula DS area consisted of farmer organisations growing vegetables throughout the year, namely during the seasons of Yala and Maha. However, majority of farmers in Dambulla DS area cultivated vegetables only during the Yala season. Two farmer organizations were selected from the two DS areas. Sinha farmer Organization from Naula DS area and Mahasen farmer Organization from Dambulla DS area were selected for the study. Among the 75 farmer organizations in Naula DS area, Sinha farmer organization was among the most active farmer organizations, as per the reports of AIs'. Similarly, among the 90 farmer organizations in Dambulla DS area, Mahasen farmer organization was among the most successful. Stratified random sampling was used to select a sample of 60 vegetable farmers, 30 each from these two farmer organizations. Farming experience, Age, and continuity in farming were identified as the major criteria for the selection of farmer organisations.

2.2 Research Instruments and Data Analysis

Primary data were collected through a questionnaire survey, which was followed by informal discussions and key informant discussions. The entrepreneurial behaviour scale developed by Chaudhari et al. [9], was incorporated into the questionnaire to assess the entrepreneurial behaviour of farmers. Assessment of group interactions was based on the five statements (covering the differing aspects) used for assessing group interactions introduced by Kaplan and Miller [20] for research on group decision making. It included decision making activities in different stages. It had a Likert scale for answers in the range of 1 (Not at all) to 5 (Very high) for each statement. Data were analysed using the Statistical Package for Social Sciences. Descriptive data were presented using tabular analysis and relationships were tested through correlation tests, and using 2-independent sample t-tests (Mann Whitney Test) for non-parametric data.

3. Findings

3.1 Group Interactions among Respondents

Group interactions of farmers were assessed by measuring their involvement in group activities of selected eight practices in vegetable cultivation. The eight identified activities were namely; seasonal planning, crop selection, land preparation and field planting, irrigation water distribution, controlling of pests and diseases, participating in training programmes, harvesting, and selling. Group interactions of each practice were measured using five statements. These five statements were measured using a 5 point Likert scale, and responses are depicted in table 1. Table 2 depicts the categorization of group interactions of practices as low, moderate, and high.

Tab. 1: Scoring pattern of group interactions

Answer	Score	Maximum score for a single practice
Very high	5	25
High	4	20
Low	3	15
Very low	2	10
Not at all	1	5

Source: Authors' classification

Tab. 2: Categorization of group interactions by their scores

Group interactions category	Score
Low	≤15
Moderate	16–20
High	≥21

Source: Authors' classification

3.1.1 Group Interactions in Seasonal Planning, and Selection of Crops

In Mahasen farmer group, interactions in seasonal planning were high. They had a group norm that 80% of the members of the farmer organization should participate at the seasonal planning. Otherwise they have to pay a fine. But in Sinha farmer group 86.7% of farmers had responded that their group interactions were at a moderate level. They had no group norm for involvement of group members like in Mahasen Farmer Organization. Forty eight percent of the respondents had moderate group interactions in crop selection. In Mahasen farmer group, 60% perceived a high level of group interactions in crop selection. But in Sinha farmer group, there were no high group interactions in crop selection. Mahasen farmer group had a pre seasonal meeting to decide crops for the season, and 80% of members' participation was considered a norm. Majority of the members participated to the meeting and involved in crop selection. In Sinha farmer group, there was no such norm for members' participation for the pre seasonal meeting. Majority of the Sinha Group farmers had decided suitable crops for season individually, with low group interactions.

3.1.2 Group Interactions in Land Preparation, Field Planting, and Irrigation Water Distribution

Eighty two percent of farmers perceived group interactions in land preparation and field planting to be low. In Sinha farmer group all the farmers perceived giving information, sharing information among group members, and helping each other to be at a low level. In Mahasen farmer group also majority of the farmers (63.3%) perceived group interactions to be low. This could also be due to non-practicing of the traditional labour sharing system by many farmers. They tried to manage farming activities by themselves using hired labour. Forty percent of the respondents of Mahasen farmer group, and the entire Sinha farmer group perceived interactions in irrigation water distribution to be at a low level. Though the entire membership should get involved in deciding the dates, and duration of irrigation water distribution, it has been decided by the committee members of farmer groups.

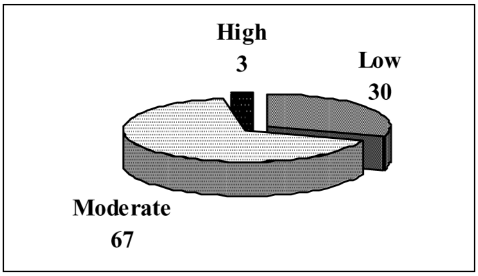
3.1.3 Group Interactions in Controlling of Pests and Diseases in Vegetable Cultivation, and Training Programmes

Eighty five percent of the total respondents found group interactions in controlling of pests and diseases at a low level. Whenever pest attacks or diseases occurred, farmers had used to get advices from agrochemical sellers and had used chemicals as remedy. Sharing of information, getting advices from subject matter specialists, and adhering to the control measures in an outbreak as a group, were at a low level. Deciding training programmes, sharing knowledge from training programmes, and selecting members for training programmes based on their preferences were low among overall respondents, as 60% of them perceived so. In Mahasen farmer group, interactions were moderate in participating to training programmes, and they had participated to at least five training programmes per year. On the contrary, members of Sinha farmer group had participated to only one or two training programmes per year.

3.1.4 Group Interactions in Harvesting of Crop and Selling

Sharing information of new practices among members, deciding the harvesting period as a group, and sharing of labour at harvesting were low among farmers. Due to time limitations most of the farmers were reluctant to work as a group, and they shared harvesting activities with family members, and hired labour. Sharing information about new markets, prices, place of selling and bargaining for a reasonable price for their products as a group were at low level in both farmer groups. Almost 95% of total respondents perceived that group interactions were low in selling of produce. They perceived difficulties in selling products in Dambulla Dedicated Economic Centre as a group due to the influence of middlemen. Majority of the farmers attempted to sell their products for a higher price individually. Overall group interactions among farmers were at a moderate level. As shown below in Figure 1, 67% of the farmers perceived their group interactions in vegetable cultivation as moderate.

Fig. 1: Percentage distribution of respondents by group interactions



Source: Survey data

3.2 Task Interactions and Social Interactions of the Respondents

Task interaction among farmers was at a moderate level. They included routine tasks that need the support of fellow farmers during different stages in farming. Seventy two percent of the farmers responded that, sharing of information; suggestions, directions, and rational decision making of the group were at moderate levels. Social task interaction of the respondents was at moderate level. Majority (55%) responded that, conformity to norms, consideration about preferences of group members, and morality of care of the group were at moderate levels. Mahasen group had 78 members, in comparison to Sinha farmer group's 172 members.

3.3 Entrepreneurial Behaviour Characteristics of Respondents

Respondents were assessed of the following ten characteristics that were identified in their entrepreneurial behaviour.

i.) Planning ability of the respondents: Planning ability of the respondents was measured by using five statements, each of them were allocated scores from 1 to 5. Total scores below 10 were categorized as low; 10–15 scores were categorized as moderate, and scores over 15 was categorized as high. Almost 70% of the respondents had planned their cultivation activities well. In Mahasen farmer group planning ability of the respondents was higher than at Sinha farmer group. Farmers in the Mahasen farmer group had adopting the seasonal plan. And those who could not follow that had to pay a fine. But in Sinha farmer group there was no such rule.

ii.) Coordinating ability of the respondents: Coordinating ability of the farmers was measured by using four statements allocating scores from 1 to 5. Total scores below 8 were categorized as low, scores from 8–12 were categorized as moderate, and scores over 12 were categorized as high. Thirty seven percent of the respondents had a high coordinating ability. They decided the required amount of land, capital, and inputs for their cultivation well in advance. But 31.4% of farmers had decided them just at the moment, and the rest (31.6%) had never planned at all.

iii.) Information seeking behaviour of the respondents: Information seeking behaviour of the farmers was measured by using 14 information sources and their frequency of usage by farmers. Frequencies were given scores from 1 to 3. Total scores below 18, were categorized as low, 18 and 28 as moderate and scores over 28 was categorized as high information seeking behaviour. About 85% of respondents had a moderate information seeking behaviour. Majority of the farmers had not used television, radio, newspapers, telephone, and NGO officers to get information frequently. Most of them had used family members, friends, relatives, agriculture instructors (AI's), agriculture research and production assistants (ARPA's) frequently to get information. There was not a single farmer having a low level of information seeking behaviour.

iv.) Innovativeness of the respondents: Innovativeness of the respondents was measured by using five practices which were introduced recently for vegetable cultivation and were allocated scores from 0 to 3, based on the number of years they had used them. Total scores below 5 were categorized as low, scores from 6 and 10 were categorized as moderate, and scores over 10 were categorized as high. Seventy five percent of the respondents had a moderate level of innovativeness. Most of them had never searched for new markets. However, they used plastic trays to transport their products. Mahasen farmer group had 30% of framers with a high level of innovativeness. Most of them used Neem based extractors as pesticides, improved seeds, and sprayer irrigation methods for cultivations.

v.) Risk orientation of the respondents: Risk orientation of the respondents was measured by using four statements, assigning scores from 1 to 5. Total scores of below 8 were categorized as low, scores 8 and 12 were categorized as moderate, and scores over 12 were categorized as high. There was not much difference in the risk orientation between the two farmer groups. Sixty three percent of respondents had a moderate level of risk orientation. Majority (62%) considered vegetable cultivation as risky and they opted to try new practices only after seeing successful results of other farmers.

vi.) Decision making ability of the respondents: Decision making ability of the respondents was measured using eight practices and allocating scores (1 to 3) based on approach to taking decisions. Total scores below 13 were categorized as low, 13 to 19 as moderate, and over 19 were categorized as high. Ninety percent of the farmers had high level of decision making ability. Most of the farmers decided on their cultivations through their own experiences. Majority of farmers were not thoughtful of practicing sprinkler or drip irrigation, and crop insurance.

vii.) Opportunity seeking behaviour of the respondents: Opportunity seeking behaviour of the respondents was measured by using five situations farmers could create opportunities and their making use of them. Scores of 1 and 2 were allocated accordingly. Total scores below 7 were categorized as low, scores between 7 and 9 were categorized as moderate, and scores over 9 were categorized as high. About 52% of respondents had a high level of opportunity seeking behaviour. Access to subsidies and credit facilities through farmer organizations, participating to training programmes, and use of information sources to obtain price details were at a moderate level. Sixty percent of the members of Mahasen farmer group had a high opportunity seeking behaviour. They had many opportunities than Sinha farmer group viz; conducting training programmes, credit facilities, and information system of Dialog (mobile) Telecom Company.

viii.) Achievement motivation of the respondents: Achievement motivation of the respondents was measured by using ten statements awarding scores of 1 to 2. Total scores below 7 were categorized as low, scores between 7 and 8 were categorized as moderate, and scores over 8 were categorized as high. About 52% of total respondents had a high achievement motivation. Motivation levels to earn higher profits, to be a well-known farmer, and to accomplish tasks better than others were at moderate levels. Majority (60%) in Mahasen group had a high level of achievement motivation. They focused higher profits, and were ambitious in farming profession.

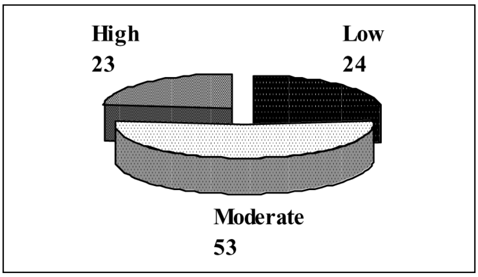
ix.) Self-confidence of the respondents: Self-confidence of the respondents was measured by using five statements, allocating scores of 1 to 2. Total scores below 8 were categorized as low, scores between 8 and 10 were categorized as moderate, and scores over 10 were categorized as high. About 47% of the respondents had a moderate level of self-confidence. Majority lacked confidence in profit making through vegetable cultivation, and most of them relied on others in carrying out farming activities. They did not take the initiative in crop selection, deciding time for land preparation, planting, harvesting and selling etc. Farmers perceived they were moderate in adapting to new situations, concentrating on a task, and saying the right opinion at the right time.

x.) Cosmopolitanisms of the respondents: Cosmopolitanisms of the respondents were measured by using five statements of their perception, allocating scores from 1 to 3. Total scores below 10 were categorized as low, scores between 10 and 12 were categorized as moderate, and scores over 12 were categorized as high. Forty five percent of the farmers had a high level of cosmopolitans. Collection of information of successful farmers from outside of village, getting information through mass media, visiting AIs and other governmental officials, gathering of recent information through agricultural literature and agricultural exhibitions was at a moderate level.

3.4 Entrepreneurial Behaviour of the Respondents

Based on the values obtained from the entrepreneurial behaviour (Index) three categories were identified. Index value below 65 was categorized as low, 65 and 75 as moderate, and over 75 was categorized as high. The overall entrepreneurial behaviour of the respondents was at a moderate level (mean value of 71.186, standard deviation of 0.17). Among the ten entrepreneurial characteristics planning ability and decision making ability were at a high level (mean values were 2.7 and 2.9 respectively). Other characteristics were at a moderate level. As shown in Figure 2, only 23% of the respondents had a high level of entrepreneurial behaviour.

Fig. 2: Distribution (as a %) of respondents' entrepreneurial behaviour



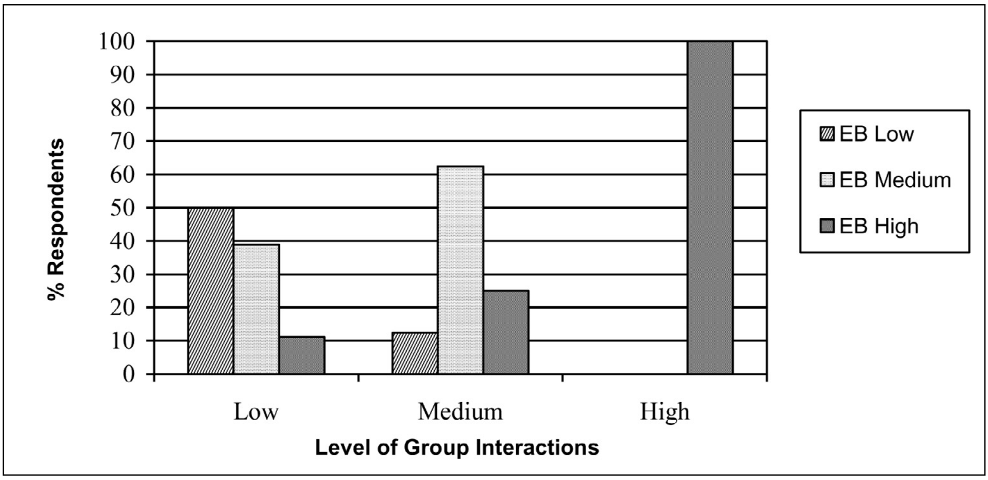
Source: Survey data

3.4.1 Relationship between Group Interactions and Entrepreneurial Behaviour

A positive significant relationship was reported between the group interactions of farmers and their entrepreneurial behaviour (r=0.507, p=0.001, significant at 0.01 level).

Fig. 3 indicates respondents' with high group interactions reporting high entrepreneurial behaviour. Among those reporting low group interactions, 50% of them had low entrepreneurial behaviour.

Fig. 3: Respondents' group interactions and entrepreneurial behaviour



Source: Survey data

3.4.2 Difference in Group Interactions of the Two Farmer Groups

The 2-independent sample t-test (Mann Whitney Test) recorded a significant difference of group interactions (p=0.007, significant at 0.01 level) between Mahasen and Sinha farmer groups. All the respondents who recorded high group interactions belonged to Mahasen farmer group. There were no respondents reporting high group interactions in Sinha farmer group. Respondents of Mahasen farmer group had high level of group interactions in seasonal planning, selecting of crops, and irrigation water distribution. Mahasen farmer group was highly concerned of group norms and rules such as, 80% of members' participation for decision making, focus on 80% of members' agreements for a decision, and fining of deviations from group's rules and regulations. Mahasen farmer group had monthly meetings, whilst Sinha farmer group had only seasonal meetings held in every 6 months. Mahasen farmer group had conducted many societal beneficial campaigns in village. This increased the cohesiveness among members. Maintaining and rebuilding of irrigation cannels, reforestation was practiced by Mahasen farmer group.

3.4.3 Difference in Entrepreneurial Behaviour of the Two Farmer Groups

According to the 2-independent sample t-test (Mann Whitney Test) there was a significant difference in entrepreneurial behaviour (p=0.007, significant at 0.01 level) between the two farmer groups. Eighty six percent of the respondents who had high entrepreneurial behaviour belonged to Mahasen farmer group, and the corresponding figure was 14% in Sinha farmer group. In Mahasen farmer group planning ability, coordination ability, and innovativeness of farmers were at a higher level than Sinha farmer group.

Conclusions, Limitations and Further Research

Findings of the study indicated the positive impact of group interactions on entrepreneurial behaviour of the farmers in farmer groups. Group interactions of farmers significantly correlated with their entrepreneurial behavioural patterns. Group interactions of farmers were moderate and entrepreneurial behaviour of the farmers was not prominent in vegetable cultivation. Decision making ability and planning ability of farmers were at a high level. Risk orientation of farmers' was fairly low. Farmers' entrepreneurial behaviour enhanced with socio-economic status and social participation. Group interactions of the farmers were high in seasonal planning, and selecting of crops. In selling, group interactions were very low. Relatively small proportionate of members in the more entrepreneurial Sinha farmer group (in comparison to the Mahasen group) indicates the effectiveness of relatively smaller groups. Attitudes of the farmers on group interactions can be improved through awareness programmes on mutual benefits, team building activities, and workshops. Group leaders could encourage the members to value healthy interpersonal relationships with the help of advisers of choice. Mechanisms to improve small group formation activities through Farmer Organizations could be focused.

Study was limited only to two groups of farmers totalling to 60 members. Farmers' behaviours were also assessed only based on their perceptions. The static nature of data is a serious weakness of contemporary management research. This study also falls into this category as the data collection (interviewing and surveying) was carried out at a particular point in time during the year 2012. A longitudinal research with higher numbers of farmer groups representation, incorporating more objective data (i.e. profits, and profitability of farmers, times spent for farming, along with the feedback of key stakeholders) is bound to provide more insightful facts.

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Abstract

IMPACT OF GROUP INTERACTIONS ON FARMERS' ENTREPRENEURIAL BEHAVIOUR

H.R.M.P. Abeyrathne, L.N.A.C. Jayawardena

Group interactions form an important component among the many factors influencing the entrepreneurial behaviour of farmers. Understanding group interactions provides insights to foster entrepreneurial activities. Matale district, which is among the top 4 districts producing high amount of vegetables in the Sri Lanka was selected for the study. Two successful farmer organizations, one of them farming in both seasons (throughout the year), and the other farming only a single season per year, were selected for the study. Overall objective of the study was to examine the impact of group interactions on entrepreneurial behaviour of vegetable farmers. Stratified random sampling was used to select an overall sample of 60 vegetable farmers, having two samples consisting of 30 each from the two farmer organizations. Descriptive and inferential analyses were conducted using the SPSS software package. Results indicated a significant relationship between the group interactions and entrepreneurial behaviour of farmers. Study revealed effective entrepreneurial behaviour involving high planning ability, and decision making ability. Majority of the farmers were at a moderate level of innovativeness, risk orientation, coordinating ability, opportunity seeking behaviour, self-confidence, achievement motivation, and cosmopolitanism. Group interactions were moderate at seasonal planning, and in selecting of crops. Group interactions were low in land preparation, pest and disease controlling, harvesting, irrigation water distribution, participating in training programmes, and selling. Entrepreneurial behaviour of farmers has enhanced with group interactions. The two farmer groups had significant differences in group interactions and entrepreneurial behaviour due to group characteristics. It is recommended to improve group interactions through awareness programmes, and small group formation activities.

Key Words: *Entrepreneurial behaviour, group interactions, farmers.*

JEL Classification: *M10, Z19.*

DOI: *10.15240/tul/001/2014-4-004*

IMPACTS OF SELECTED NACE INDUSTRIES' FOREIGN OWNERSHIP ON THE CZECH ECONOMY

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Introduction

This article is focused on the comparison of economic parameters of private companies under domestic control and private companies under foreign control (enterprises under state control are completely left out from the analysis), there is a clear relation to foreign direct investments (FDI). Although FDI pluses and minuses can be discussed in various contexts, empirical studies show that FDI are beneficial for the increase of performance of companies, industry and macroeconomic indicators. FDI bring benefits to a host country through several channels. Besides capital inflow itself, FDI are usually linked to the movement of specific tangible and intangible assets such as technology, managerial abilities and skills, corporate governance but also for instance the access to the network of companies interconnecting on foreign markets.

As soon as a foreign investor achieves a certain ownership level in a company in the host country and gains the control of company management, such an investor is willing to provide specific assets for the foreign company the use of which should bring profitability increase regardless of whether the company was built as a green field investment or it was taken over through microeconomic integration. As it is shown for example in The Economic Survey of Europe [5], FDI are just for this reason quite often regarded as an important catalyst in the economic transformation of economies in transition. The exact aim of current paper was to estimate whether the Czech companies' equity increasing and returns on equity's development have an impact on GDP's development in selected Czech business sectors.

Not only developing countries and economies in transition perceive the entry of foreign investors and capital inflow, know-how and other tangible and intangible assets as a catalyst for economic development. Thus a number of countries liberalized the access to foreign capital and even bearing in mind certain negative impacts on domestic enterprises, they tried and are trying to attract foreign investors. However, host countries of course analyze, after some time, the benefit and impact of foreign entities on domestic economy and assess whether resulting effects are rather negative or positive as well as the way how foreign entities act on domestic territory. Therefore our research objective is therefore the assessment of mutual relation between the change in equity and its return (ROE) and the impact of such indicators on the change in the growth rate of GDP with the emphasis on the fact whether the enterprises are of domestic or foreign origin. Therefore FDI have some several impacts at the Czech microeconomic level [8]. We argue then, it could be interesting to compare domestic and foreign ownership with weighted GDP growth rate in the Czech Republic. If foreign equity in the country and rentability of foreign owned companies affect GDP more than rentability of domestic companies, foreign ownership is more efficient for the Czech economy. From our point of view, microeconomic data in pooled sample could influence macroeconomy of the country. It motivates recent study, too.

1. Literature Review

However, the authors did not intend to limit the theoretical base just on the researches coming from mainland Europe countries, also because many foreign investors entering to Czech

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companies and setting up their subsidiaries on the territory of the Czech Republic come from the market system. That is why the following text brings the survey of selected studies that are relevant for this paper and intentionally cover a broader spectrum of economies than just those belonging to the mainland European model.

A significant number of analyses were carried out on the data of US companies that are a key representative of the Anglo-American model. For example Wheeler [23] or Dworin [5] examined investor entry to US enterprises and showed that foreign-owned subsidiaries in the USA had reported lower profitability than domestic companies. Such conclusions were confirmed by Grubert, Goodspeed and Swenson [8] who published the data showing that in 1987 profitability of 37% of all non-financial foreign companies was in the interval of -2.5% to +2.5% while only 27% domestic ones were in this interval. On the other hand Doms and Jensen [4] found out that foreign-owned US companies were more productive than the domestic ones but were, on average, less productive that multinational companies with an American parent company. Using the data of US companies in manufacturing industry, the FDI impact was analyzed for instance by Desai, Foley and Hines [3]. For forecasting the changes in foreign investments, they applied company specified weighted average of foreign GDP growth in the interaction with geographically specified foreign investments distribution. According to the authors, the weighted average of foreign GDP growth is a strong predictor of subsequent foreign investments of US companies. According to them, foreign growth predicts the growth of foreign investments by foreign companies focused on satisfying the needs on host markets. Their conclusions do not support the thesis that increased activity of foreign companies displaces the activity of domestic companies acting in the same field.

Min and Smyth [5] argue that firms with better corporate governance arrangements will be better placed to absorb technological transfer from foreign equity ownership for two main reasons. First, firms with better corporate governance will have more transparent decision-making processes. Improved corporate governance limits potential for conflict of interest and improves the disclosure of information. Increased disclosure of information makes it easier for stakeholders to assess, and oversee management and keep management accountable. Second, as one metric of corporate governance, it is argued that outside directors are more independent than their inside counterparts. The reason is that their future career does not depend on the professional advancement of their board colleagues as much. Inside directors might be less willing to put pressure on management because they fear it might hurt their own career prospects through creating enemies within the firm, particularly if there are adverse short-term side effects such as job losses. Outside directors, on the other hand, will be less concerned with internal politicking and can exert pressure on management to make decisions designed to put the technological transfer from foreign ownership to best use.

Among the mainland Europe type of countries also Japan is included. Sakakibara and Yamawaki [18] focused on monitoring the profitability determinants of subsidiaries of Japan multinationals in 1990–1996. The results of their researches show that the determinants affecting the profitability of subsidiaries differ depending on a host country. This suggests that the economic and institutional factors specific for host regions can significantly affect the profitability performance of foreign subsidiaries. Unlike the size that affects subsidiary profitability significantly in all countries, other effects such as experience, local supply chains, local sales and macroeconomic conditions affect the performance of subsidiaries in a different way depending on the host country.

He et al. [5] investigate the relation between foreign ownership and the informativeness of stock prices in 40 markets. They show that foreign ownership is positively related to price informativeness, measured by probability of informed trading and price nonsynchronicity which reflects firm-specific variations in stock returns. They also find a stronger association between stock returns and future earnings innovations for firms with higher foreign ownership. But in the Czech Republic there is the bank based type of financial system. Therefore we will investigate return on equity (ROE), not relationship to stock prices.

It is apparent from the above that a large number of empirical studies were published dealing with the whole range of issues related to FDI. Nevertheless, as Jarolím [12] suggests, it is relatively striking that only a few of them deal with FDI impacts on Central and Eastern Europe countries despite the fact that foreign capital inflow is regarded as one of the key factors of transition process development. The author in his study analyzed the data of manufacturing sector in 1993–1998. He focused on the comparison of the indicators such as productivity of labor, external orientation and investment activities of foreign- and domestic-owned companies and tried to find the answer to the question which group achieves higher growth rate of production factors. Additional objective was to examine the existence of spillover effect. His conclusions showed that foreign-owned companies report higher labor productivity, export larger part of production volume and invest more funds related to total sales. However, these conclusions are true just in case that company size is not considered. Otherwise the results show that foreign-owned companies reach only 90% productivity level. The author did to manage to prove the existence of spillover effect.

As to the mainland Europe territory for instance the researches by Arndt and Mattes [1] compare the size and productivity of domestic and foreign German companies and concluded that foreign MNCs are smaller and more productive. The rate of employment in MNC was by 15% lower while they reported total productivity factor (TFP) higher by 5.6% to 6.5%. MNC labor force productivity was higher even by 20%. They also proved that while the effect of ownership change on employment is not significant, the effect of the change on labor force productivity and total productivity is positive. On the other hand the study by Gelübcke and Annex [6] showed that foreign-controlled companies in the sector of services doing business in Germany were characterized by employment higher by 50%, more than 60% higher wages and by 2% to 6% lower return on sales as compared with domestic companies.

The studies conducted in emerging economies are important, too. For example Yasar and Paul [24] compared in their analysis the performance of the companies with foreign ownership with the performance of purely domestic industrial companies. For their analyses they used the data of five emerging economies, namely Poland, Moldova, Tajikistan, Uzbekistan and Kyrgyzstan. They found out unambiguously that foreign-owned companies report higher productivity, capital use intensity, share of export and import, and employment and wage level. They also found that industry with the presence of foreign subsidiaries of multinational companies shows performance improvement of domestic companies. These findings support the hypothesis that foreign companies bring technology and skills, access to foreign markets and new job opportunities that increase the performance of host country companies. This also indicates that the connection with foreign-owned companies should be supported because it leads to the increase of industry productivity and competitiveness in emerging economies.

Gallová [6] examined the impact of FDI on countries of Balkan and countries of Vysegrad 4 Group. Result of her research is that in these countries in period 1993–2009 was not detected any positive effect of domestic investment by foreign ones. On the contrary, FDI had negative influence and crowd out the domestic investment. On the other hand, Szanyi [20] shows in his study that foreign-owned companies doing business in Hungary reported worse financial results than domestic companies, especially in the first years after the investment was made.

The impact of FDI on selected (not macroeconomic) indicators is addressed by a number of studies. Large part of them focuses on the effects on domestic companies caused by FDI outflow from the country. A number of others keep track of FDI inflow per the number of employees and wage level (for example Demel and Potužáková [2]). However, there are studies that (similar to this article) deal with the impact of direct foreign investments inflow on the profitability of companies. Studies come from various parts of the world that differ not only in terms of economic development but also as to the type of their financial system and thus the type of ownership structure dominant model. The Czech Republic is, as for instance Roubíčková [16] shows, a typical mainland European country with a strong banking system and the capital market is not a key source of funding (currently – in March 2013 – there are 30 stocks listed on the Prague Stock Exchange). The mainland European management model is a characteristic insider system representing a higher level of influence on company management from the inside. This is possible because in this system there is a possibility (and conditions) for the occurrence of majority or substantial ownership. The fact that quite often it is foreign majority ownership is shown by this analysis.

In the Czech Republic, also Hanousek, Kočenda and Švejnar [9] carried out a research. Their analysis (conducted for the years of 1996–1999) showed that as to the companies privatized within the large privatization the type of ownership does not play a significant role. The authors take into account not only private foreign and domestic ownership but also state ownership. In their opinion, concentrated foreign ownership has positive impact only when it is applied to industrial enterprises and the concentrated foreign ownership increases sales revenues while on the contrary, more or less the same concentrated domestic ownership over a given period decreased labor cost. The authors analyzed the companies the stocks of which were traded on the Prague Stock Exchange in 1996.

The performance comparison of companies before and after takeover was carried out by Jurajda and Stančík [13]. The authors regarded as foreign-owned those companies in which a foreign entity had more than 10% stake in subscribed capital. More than 4,000 manufacturing sector companies in 1995–2005 were monitored while an important milestone was 1997 when a lot of companies were taken over after privatization had been completed. The analysis suggested that the impact of foreign capital entry is positive in particular in non-export manufacturing fields. In other areas its influence is small.

The impact of foreign owners on selected indicators of companies was addressed also by Roubíčková [17]. The aim of the paper was to assess the impact of being part of an institutional subsector on the development of profitability and indebtedness of construction sector companies. Thus the development of indicators of foreign- and domestic-owned companies since the beginning of 2007 through to the middle of 2011 was analyzed. The analysis showed that ROE of private foreign-controlled companies is not, in the long term, as high as expected as compared to private domestic-controlled companies. It was not even proved that such companies would bring higher added value to their owners in the long term. Although the share of equity to total assets was lower in foreign-controlled companies (they employ cheaper financial sources in the long term), this fact does not result unambiguously in higher profitability.

2. Data and Methodology

For the analysis, the data from corporate financial analyses in 2007–2012 published by the Ministry of Industry and Trade was used. It was quarter data for five business sectors due to its NACE categorization including also its GDP. Analyzing industries are (i) Mining and quarrying, (ii) Manufacturing, (iii) Electricity, gas, steam and air conditioning production and its supply, (iv) Water supply, sewerage, waste management and remediation activities, and (v) Construction. For other NACE sectors their GDP values are not collected. Due to that reason we have just chosen these five NACE industries for our analysis. We have analyzed time series from 1/2007 to 4/2012 period.

The Czech Republic is a small open economy with a significantly higher number of private enterprises under foreign control (and not only in the period 2007–2012) in selected sectors, as shown in Fig. 1.

Equity had changed and also numbers of companies had changed in each NACE industry in our estimated period. Therefore we have formulated average equity growth rate by using equation (1):

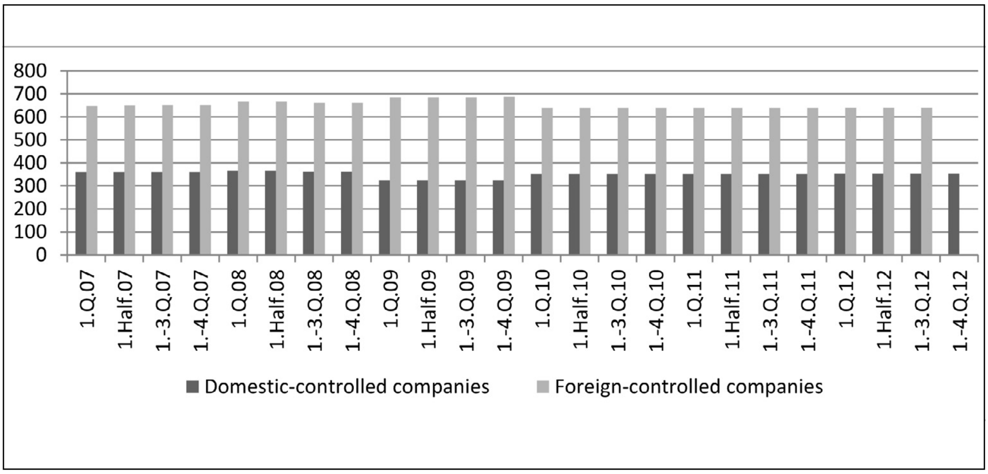
$$ae_{it} = \left(\log\left(\frac{E_{it}}{no_{it}}\right) - \log\left(\frac{E_{i(t-1)}}{no_{i(t-1)}}\right)\right).100\ , \quad (1)$$

where ae_{it} means average equity growth rate of i NACE business industries in time t, E_{it} means equity and no_{it} is number of selected companies.

We have examined relation between domestic/foreign equity, rentability of these companies and GDP. Due to that we have to examine also weighted GDP. Weights depend on changes in foreign equity on total amount of companies' equity in the Czech Republic. Weighted GDP growth rate have been calculated by equation (2):

$$whdp_{it} = \left(\log\left(w_{it\frac{z}{f+d}}.\ HDP_{it}\right) - \log\left(w_{i(t-1)\frac{z}{f+d}}.\ HDP_{i(t-1)}\right)\right).100\ , \quad (2)$$

Fig. 1: Number of companies in selected sectors



Source: Own based on Ministry of Industry and Trade's financial analysis

where $whdp_{it}$ means weighted GDP growth rate of *i* NACE business industries in time *t*, and finally in GDP weights $w_{it\frac{z}{f+d}}$ symbol *z* is equity which changes from *f* for foreign to *d* for domestic equity.

Min and Smyth [5] also verify the hypothesis weather an increased foreign equity ownership has a positive effect on firm productivity. They employ the GMM method of instrument variable estimation to address the possible endogeneity problem associated with the appointment of outside directors in robustness checks, too. Varum and Rocha [5] use in their estimation a dummy variable which allows distinguishing between foreign owners and domestic owners. Against to them we employ panel EGLS estimation with cross section weights and differ between domestic and foreign owners. Our panel regression model is then described as follows by next equation (3) separate for domestic and foreign owned equity:

$$whdp_{it} = \alpha + \beta_1 . ae_{it} + \beta_2 . ROE_{it} + AR(1) + \varepsilon_{it} \ , \tag{3}$$

where weighted GDP growth rate $whdp_{it}$ is endogenous dependent variable, exogenous independent variables are average equity growth rate ae_{it} and ROE_{it} which means return on equity of *i* NACE business industries in time *t*, α is constant and ε_{it} means residuals. We also have to put auto-regression *AR(1)* into our model to optimize autocorrelation of residuals.

3. Discussion on Empirical Results

Due to aspect of the companies' size and its possible effect on the profitability of firms it is used weighted GDP per share of the both, foreign and domestic owned companies. Our sample has estimated whether foreign-owned corporations differ significantly from domestic companies in these aspects. The results clearly show that foreign-owned companies have a positive impact on GDP's growth rate through both, an increase in equity and increase ROE. In the case of domestic firms positive impact of ROE's change was not demonstrated. There is the only one proven positive impact of the domestic equity's change on GDP.

According to the fact that the other parameters have not been significantly extended (we have tested also changes within pooled sample of equity per assets, weighted costs of capital, risky free rate, market risk premium), the authors believe that the main reason of the above results may be in foreign-owned companies tendency to repatriate their profits. Repatriation of profits is a logical consequence of the efforts of foreign investors

Tab. 1: Interpretation of regression results (weighted GDP growth rate as dependend variable)

FOREIGN EQUITY	α	β_1	β_2	**AR(1)**
	-0.9272	**0.5006** [a]	**0.2653** [b]	**-0.1945** [b]
	(0.0538)	(0.0000)	(0.0477)	(0.0352)
	0.4755	0.0219	0.1317	0.0912
	Adj. R^2	S.E. of reg	Durbin-Wats.	
	0.8507	9.6415	1.7794	
DOMESTIC EQUITY	α	β_1	β_2	**AR(1)**
	-0.2979	**0.7336** [a]	0.0948	**-0.2738** [a]
	(0.7069)	(0.0000)	(0.6671)	(0.0042)
	0.7901	0.0583	0.2427	0.0936
	Adj. R^2	S.E. of reg	Durbin-Wats.	
	0.7019	21.1511	2.1016	

Note: [a, b] denote significance at 1%, 5%

Source: Authors' calculations

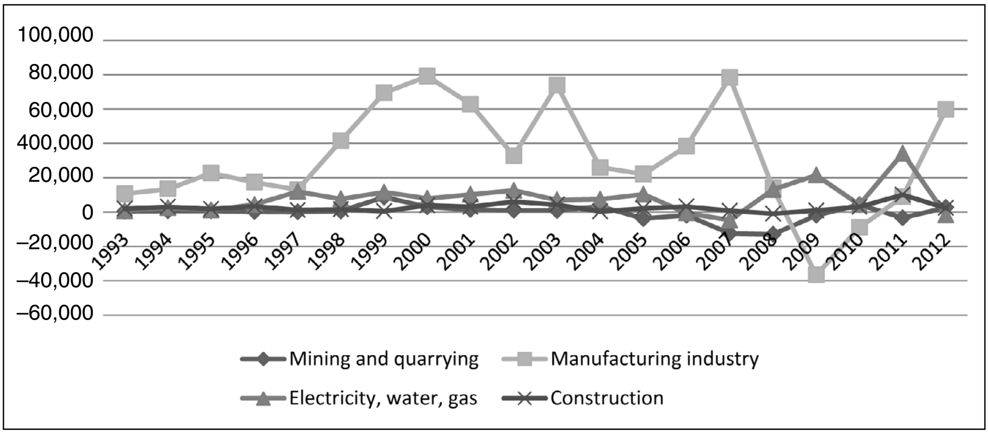
to realize returns. The repatriation is necessary to show a profit also to the investors. It is possible that foreign-owned firms are therefore more willing to show a profit than domestic companies. Domestic companies can also be desiring to show a lower profit due to lower tax liability. It would confirm that the increase in equity has a positive effect on GDP in both foreign-owned and domestic companies, too.

Technically, there is no multicolinearity among all exogenous. The Appendix chart shows that there is not also significant correlation between residuals and exogenous in our models. Therefore we reject the hypothesis of heteroskedasticity problem within residuals. Even if there is little bad meassure of positive (foreign) and negative (domestic) autocorrelation in residuals, our models are in good condition. All timeseries and panel data have been stacionary at their first differences.

A foreign direct investment can be regarded as an investment in which a foreign investor owns 10 or more percent of stock (share) or rights to vote. As part of a direct foreign investment, besides a share in subscribed capital, also reinvested earnings and other capital can be regarded and that comprises credit relations with the foreign investor. Unless this share exceeds 50%, the companies with foreign ownership are included in the public or private national sector [19]. Thus foreign control is defined as a direct or indirect (through interconnected entities) control of more than a half of shareholders' voting rights or of more than a half of shares. Control country is determined according to the headquarters residence of the top control institutional entity, e.g. the company. That is the company that itself is not further controlled by any other institutional entity [13].

In general, FDI are formed by a contribution of foreign investors to subscribed capital (SC) of domestic companies, by reinvested earnings (RE) of the earnings (or their part) generated by the companies and reinvested in the business on domestic territory, and last but not least by inter-company credits between the foreign (parent) company and the domestic company (subsidiary). Unlike the two remaining components of direct foreign investments, the specifics of reinvested earnings are that they do not really mean real inflow of foreign capital on foreign exchange market. Thus reinvested earnings of foreign companies are the value that is comprised in the balance of payments but does not have any impact on foreign exchange market and consequently on Czech crown exchange rate. Most of the data in the balance of payments shows the transactions between country residents and foreign entities within which domestic currency is exchanged for foreign currency. Such transactions are then reflected in the changes in demand and supply on the foreign exchange market.

Fig. 2: Inflow of direct foreign investments to selected sectors in 1993–2012



Source: Own based on ČNB – Inflow of direct foreign investments to selected sectors as per sectors and countries – timeline

Fig. 2 shows the inflow of foreign direct investments to selected sectors in 1993–2012 according to the information of the Czech National Bank. By 1997, the data include just direct foreign investments to subscribed capital, since 1998 their part has been reinvested as reinvested earnings and other capital. Sector division differs from the one used for the analysis in this article because, till 2009, CNB still applied the original segmentation as per the industry classification of economic activities (OKEC). The graph shows that the largest FDI inflow was recorded in manufacturing industry where the largest year-to-year decrease can be seen in 2008 and 2009, namely -64,575 mil CZK and -50,540 mil CZK which, just in 2009, represented -365%.

Majority ownership of companies in a given industry, i.e. institutional sector was regarded as the key factor. Institutional sector represents a set of institutional units that are characterized by their similar focus and objectives and are used to analyze income creation and distribution. Sectors are further divided into subsectors. In case of non-financial enterprises which this article deals with the split is made depending in the entity that controls and runs them. Thus the enterprises under state control, private enterprises under domestic control and private enterprises under foreign control are distinguished. Although the split into individual subsectors cannot be made quite accurately as the subsectors mutually overlap in some cases and part of national public and private sector enterprises can be owned by foreign owners, but even so it has significant explanatory power.

The earnings of the foreign company can either be repatriated as dividends back to the parent company or reinvested in the domestic country and thus the original foreign investment can be increased. In both the cases such a transaction is recorded as a cost in the current account income balance item but only dividends have real impact on external imbalance of the country as they increase the demand for foreign investor currency on the foreign exchange market. Reinvested earnings remain in domestic economy and due to the double-entry principle of balance of payments item posting they are recorded as the inflow of direct foreign investments to the country. Repatriation – the repatriation restrictions and the amount and method of taxation of profits may therefore be an important factor in the actual decision-making about the allocation of investment, such as Szarowská [21] presents.

The inflow of direct investments to the Czech economy as a whole is fluctuating. For instance in 1999–2002 it was growing each year, on average, roughly by one tenth (even at relatively high basic values over the last year) and the average yearly inflow in this period was

225.9 bil. CZK. Such a level indicated a world record of the Czech Republic as to the volume of incoming investments per capita. Over this period, reinvested earnings grew each year, on average, by 41%. However, in 2003, substantial year-to-year decrease of direct foreign investments by 74% occurred while the reduction of reinvested earnings volume was just by 1.7%. In 2003, direct investments reached 72.9 bil. CZK. In 2005, until then the highest ever inflow of direct foreign investments to the Czech economy was recorded with the net balance of 279.2 bil. CZK. – out of that capital inflow and reinvested earnings reached 262.5 bil. CZK, the rest being other investments. In 2006, direct foreign investments to the Czech Republic dropped year-to-year by 144.5 bil. CZK (i.e. by 52%). Capital entries to Czech companies slumped by 148.8 bil. CZK. However, foreign investors reinvested back to the businesses on the territory of the Czech Republic the earnings in the amount of 82.1 bil. CZK which represented by 4 bil. CZK more than in 2005. Contribution of this study is also examining relationships in period 2007–2011.

The aim of the article was to estimate whether the Czech companies' equity increasing and returns on equity's development have an impact on GDP's development in selected Czech business sectors. In future research we will pay more attention to investigation whether foreign-owned firms perform significantly better than domestically-owned firms. We will try to estimate the relations between ROE, ROA and the predictor variables which are number of employees, labor productivity, equity, R&D expenses as a percentage of sales and investments.

Concluding Remarks

Our study has proved positive impacts of foreign ownership on GDP in the Czech Republic. Foreign-owned companies have a positive impact on GDP growth rate through both increase in equity and increase in return on equity (ROE) of Czech firms. In the case of domestic-owned firms the positive impact of ROE change was not demonstrated. Due to the fact that our research has investigated domestic-owned as well as foreign-owned companies, there should be a relation to the FDI issues. Our results have definitely suggested a theoretical assumption of most relevant literature that FDI support economic growth and profitability of selected business branches.

According to the theoretical assumptions in the article, foreign-owned companies should seek higher profitability in order to outweigh the risks associated with the entry to foreign economy. Nevertheless, one of the reasons for this phenomenon may be the size of firms under foreign control and their ability to create economies of scale. Large foreign companies may then also weaken their domestic operation in the sector or vice versa strengthen their activities.

In general, the main reasoning behind the paper conclusions related to foreign-owned companies may be their tendency to repatriate profits. While foreign-owned companies are motivated to maximize their profits which are then repatriated abroad to increase wealth of their parent companies, domestic-owned companies do not prefer maximizing profitability due to their majority ownership while their, managers are able to get information and realize their strategic goals more easily. However, one question still remains to what extent this issue is affected by the risk that domestic companies could report lower profit due to lower tax liability, or just by the differences between taxes in the Czech Republic and abroad.

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Appendix:

Tab. 2: Multicolinearity of regressors

Correlation *t-Statistic* *Probability*		**Foreign** ROE_{it}	**Domestic** ROE_{it}
	ROE_{it}	1.0000	1.0000
		-----	-----
		-----	-----
	ae_{it}	-0.0251	-0.1327
		-0.2665	-1.4228
		0.7903	0.1576

Tab. 3: Heteroskedasticity of residuals

Correlation *t-Statistic* *Probability*		**Foreign** RESID01	**Domestic** RESID02
	Residuals	1.0000	1.0000
		-----	-----
		-----	-----
	ROE_{it}	-0.0013	-0.0757
		-0.0132	-0.7891
		0.9895	0.4318
	ae_{it}	-0.0929	0.0291
		-0.9693	0.3025
		0.3346	0.7628

Abstract

IMPACTS OF SELECTED NACE INDUSTRIES' FOREIGN OWNERSHIP ON THE CZECH ECONOMY

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The aim of the current paper was to estimate whether the Czech companies' equity increasing and returns on equity's development have an impact on GDP's development in selected Czech business sectors. Contribution of our study to foreign direct investment and firm performance the matters is using quarterly frequency data to examine relationship between foreign ownership and quarterly economic growth in selected NACE business sectors. Hanoušek et al. [9] argue that Foreign Direct Investments (FDI) have some several impacts at the Czech microeconomic level. We argue then, it could be interesting to compare domestic and foreign ownership with weighted GDP growth rate in the Czech Republic. If foreign equity in the country and rentability of foreign owned companies affect GDP more than rentability of domestic companies, foreign ownership is more efficient for the Czech economy. From our point of view, microeconomic data in pooled sample could influence macroeconomy of the country. It motivates recent study. We are estimating panel regression models with cross section weights. Our endogenous variable is weighted GDP growth rate in pooled data of all our selected business industries. Our exogenous variables are average equity growth rate and growth rate of return on equity (ROE), both in pooled sample of selected Czech industries. This study proved positive impacts of foreign ownership on GDP in the Czech Republic. Foreign-owned companies have a positive impact on GDP growth rate through both increase in equity and increase of ROE of Czech firms. In the case of domestic-owned firms the positive impact of ROE change was not demonstrated.

Key Words: *Foreign and domestic ownership, foreign direct investments, panel regression.*

JEL Classification: *G34, M12.*

DOI: *10.15240/tul/001/2014-4-005*

FINANCIAL IMPACT IN CASE OF INVESTMENT TO THE FOREST PROPERTY AS A RESULT OF DIFFERENT TREE SPECIES COMPOSITION IN THE CZECH REPUBLIC

Pavlína Köhler, Vlastimil Vala

Introduction

The total area of forestland in the Czech Republic is about 2,593,923 ha, of which state owns 60.32%, 19.44% is owned by natural person, and 16.39% is owned by municipalities and the rest is owned by others legal bodies. [11]

The spruce covers the largest area – 1,138,424 ha (47.7%); the second largest area is covered by pine – 332,685 ha (13.9%). Coniferous species cover in total 67.2%. Oak and beech – among the broadleaved species – cover the largest area (7.4%) and (7.2%), respectively. Important species is also birch, a pioneer species (4.2%). Broadleaved species cover in total 32.8% of the area covered by tree species. [13]

The primacy of spruce is given both by natural conditions and by the history of forest management. "According to the analysis, the current proportion of homogeneous spruce forests in the total forest area is 20.3% (pure) and the current share of spruce-dominated forest ecosystems is 10.7% (dominant)" [10, p. 521].

"In the Czech Republic, the area of the coniferous trees is about 330,000 ha larger than is appropriate for the prescribed target tree species composition, and this area should be replaced by beech" [18, p. 33]. Decrease of Abies alba from natural 20% to critical value of less than 1% leads to disappearing of A. alba from Czech forests [6]. Ministry of agriculture wrote in the Report about condition of Czech forests from 2010 that natural representation of spruce was 11.2%, fir even 19.8% and beech 40.2% with current representation only 7.32% [12].

Additive trees grow in current spruce monocultures, which at least partly limit negative influence of spruce stands. Emission of these trees and their support possibly lowers costs on modification of species composition it the future. [16, p. 24] Frequent calamities are caused by instability of often monocultural or damaged and weakened forests whether because of their inappropriate tree composition. This is the reason for changing their current composition to their natural state.

Many scientists proved bad health condition of Czech forests and their weak resistance against biotical and abiotical factors. E.g. 31% of Czech forests are potentially endangered by honey fungus (Armillaria sp.). It has optimum from 2 to 4 fvz – forest vegetation zone in nutrient stations [8]. Čermák et al. [2] confirmed middle to high risk of Armillaria attacks in spruce stands within investigated locality in 3rd and 4th fzv and its possible deterioration simultaneously with change of external conditions.

Representation of Fagus sylvatica in the Czech forests is small, even though F. sylvatica is our one of the most important forest trees. However, less attention to its health condition is paid. Beech was and is considered as relatively healthy and resistant tree, but in last years it became endangered by bark necrosis. [7]

Change of tree composition to its natural form is supported by state. It creates tools which motivate forest management to change it according to target composition and stand conditions. Subsidies are one of the tools. They buffer part of planting costs and maintenance of ameliorating species (MZD). Bartoš et al. [1] wrote that forest regeneration with high representation

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of MZD (spruce 30, oak 30, beech 30, larch 10) was supported by financial endowment, which was about 46 thousands CZK higher than real plantation costs. This difference is five times higher than in case of forest regeneration without MZD (spruce 40, beech 30, fir 30) in minimal quantity per hectare for principal tree species.

Forest owners and managers are motivated to change their forest composition. But the change will have an economic impact on their property. Bartoš et al. calculated average price of spruce and beech assortments in real stands 1,273 CZK/m^3 spruce and 1,238 CZK/m^3 beech. They measured 520 m^3/ha in spruce stand in age of 45 years, which could correspond to site index +1 (36). [1]

Current average price of standing stale spruce wood without sorting was 1,300 CZK/m^3 (according to private information from the harvest cut in years 2011/12).

Suitable mixture of spruce with beech has a deciding factor on production and could change according to locality. Volume and quality yield of mixed spruce-beech stand does not reach yield of pure spruce stand, but not higher than sum of yields of pure beech and pure spruce stands calculated from assistant stands. [Wiedemann 1942 ex 15].

1. Aim and Hypotheses

The aim of this research is to create a model of dependency of total profit from forest stand depending on its composition and prove that if the forest composition is changed in favour of beech, the financial impact will be significantly negative. For our example pure Norway spruce (SM) stand is progressively changed to pure beech (BK) stand in 4th fvz with different site indexes. Time factor is eliminated, because all forest management activities are made at the same time in a model stand. The stand area is 100 hectares and on each hectare there is a forest group of differing age differs about 1 year from the forest besides. In one year trees are harvested, planted, maintained, protected, etc. All cash flows are related to the area of 100 ha, but all activities are done within one year. So, the results could be understood differently. The costs, revenues and profit are cash flows of 1 ha stand during 100 years.

The research is based on the three following hypotheses:

a) The model pure SM stands profit more (P_a) than pure BK stands (P_b).
   $P_a > P_b$ — P – profit
   $P_a = R_a - C_a$ — C – costs
   $P_b = R_b - C_b$ — R – revenues.
b) Decreasing of SM composition decreases revenues and silvicultural costs rises up and total profit decreases too.
   $P_a = P_b k$ — k – coefficient includes influence of stand composition to the total profit.
c) The total profit is influenced by change of stand composition. The total profit (loss) is function of stand composition change.
   $P = f(X)$ — X – share spruce.

The results could be a start point for further research by modelling risks or others influences. Risk is related to possible insurance of forest, etc.

2. Material and Methodology

Many scientists proved that progress of high growth of dominated and co-dominated species in mixed stands is the same as high growth in pure stands. Type of mixture does not influent shape of growth curves. [Weidemann1951, Weck 1955, Halaj 1968, Hladík 1978, ex 9]. Halaj based on own research stated, that forest site type trees mixed in one stand have in average comparable site index [5].

Taking the facts above into consideration a model stand was created. The stand area is 100 ha with rotation period of 100 years and it is located in 4th fvz natural beech wood stands according to the Typological classification system of ÚHÚL (The Forest Management Institute) [14]. The stand consists imaginarily of one hundred forest groups each with an area of 1 ha and different age from 1–100 years. In the whole area there will be imaginarily grown Norway spruce (SM) and all costs and revenues will be calculated within one year in the stand. In each next example it will be replaced 10% of SM by beech and continued until the stand is pure beech (BK). This presumption that was introduced above is that SM and BK on the same locality will get identical mean high in the same age meaning site index of both the trees will be the same. Regeneration period is one year. Forest regeneration will be done immediately after major harvest. The model is used for all site indexes. Totally there are 121 different situations. For each from eleven different site indexes from +1 (36) to 9- (16) there are eleven possible species compositions from pure spruce to pure beech stand.

No calamities or other outsider factors are considered. The model stand is supposed healthy, wood is ideally without any damages and the stand is fully-stocked.

2.1 The Mensuration and Growth Tables (MGT)

Data about merchantable volume in age classes of five years is available from the Mensuration and Growth Tables (MGT) of the main tree species of the Czech Republic [3], where the left part of the tables represents the mensuration tables plus indicating the basic stand characteristics of the present stands and the right part of the tables is the growth table itself. It indicates the predicted development of selected stand characteristics for the main stand (mean height, mean diameter, merchantable volume) and the thinning (merchantable volume).

Allowable cuts (merchantable volume) are set from MGT, and from the regulation No. 84/1996 Coll., About forest planning, for their comparison [19]. The volume of cuts is used for calculation of costs and revenues for the model stand.

2.2 Costs Calculation

Necessary costs are divided into two groups: silviculture, which includes protective costs and logging, which includes cutting, crosscutting, delimbing and skidding. Wood is sold on roadside. Other costs e. g. cost of road maintenance, amelioration, management were not considered because they could be very different according to the locality.

Silviculture and logging costs were calculated from moment of stand regeneration to harvest cut. Stand is regenerated by 4,000 four-years-old plants of SM and 9,000 three-years-old plants of BK. Spruce is planted by hole planting and beech by slit planting to the full-area soil prepared. BK plants are full-area fenced up to 50% of its composition. With higher BK composition the fenced area decreases to 20% in case of pure BK stand. In the first three years the SM is scythed two times a year in lines and BK in full-area, SM is painted against pine weevil and against game browsing in autumn. Then the next three years the scything is done only once a year and protection against game browsing annually decreases by 20% in older trees. When the BK plantation is established the fence is removed and stand is tended. In the age of 10 to 15 years in the moment of canopy closure the negative selection crown thinning is executed and 30% of SM trees are removed. 30% of subdominant and co-dominant BK trees is removed.

In stands of ages 20 to 95 years thinning is executed. In pure SM stands and mixed stands with minimum composition preventive measures must be taken according to regulation No. 236/2000 Sb., which altered Decree of the Ministry of Agriculture of the Czech Republic No. 101/1996 Coll., setting forth details for securing forest protection and stating models of service badge and of forest guard certificate [20]. Basic condition of Ips typographus is observed by insect trapping (cut control spruce stems, the so called trap trees, or installation of pheromone-baited traps), which are installed in spring and summer seasons in minimum of one trap on each 5 hectares of forest stands older than 60 years with at least SM20.

Used prices of all activities are reported in appendix No. 1, there are prices of contractors including their profit margin.

$$C = n_{sm}Ap_{sm} + n_{bk}Ap_{bk} + nAp_0 + nAp_1 + nAp_2 + nAp_3 + nAp_4 + np_5 + Ac_p + n_{lp}p_{lp} + E_1Ac_{pr\ (sm,bk)} + E_2Ac_{pro\ (sm,bk)} + E_3Ac_{t\ (sm,bk)} \tag{1}$$

n_x – number of units (operations or meters of fence),

$n_{sm,bk}$ – number of plants,

n_{lp} – number of traps,

$p_{sm,bk}$ – plant price included its planting,

p_{lp} – price of traps included its control and remediation,

A – area of silvicultural or logging operation in ha,

$E_{1,2,3}$ – volume of cut with bark deduction in 1 m^3,

p_0 – price of full-area site preparation,

p_1 – price of scything in lines 50 cm for 1 ha,

p_2 – price of full-area scything for 1 ha,

p_3 – price for painting against spruce brows for 1 plant (including work and material),

p_4 – price for painting 1 ha against weevil (including work and material),

p_5 – price one running meter for a fence building and disposal,

$c_{p\ (sm,bk)}$ – costs of clearing on 1 ha (30% reduction),

$c_{pr\ (sm,bk)}$ – costs of thinning and skidding of 1 m^3 of softwood and broadleaved species in forests up to 40 years,

$c_{pro\ (sm,bk)}$ – costs of thinning and skidding of 1 m^3 of softwood and broadleaved species in forest older than 40 years,

$c_{t\ (sm,bk)}$ – costs of harvest cut and skidding of 1 m^3 of and softwood and broadleaved species.

2.3 Revenues Calculation

Revenues from the model stand were calculated as a product of cubic capacity harvested assortments and its price on roadside, which is recorded by the Czech statistical office to the roadside place [4].

$$R = M_1\ A\ p_6 + M_2\ A\ p_7 + M_3\ A\ p_8 \tag{2}$$

$p_{6\text{-}8}$ – wood price according assortments,

M_1 – volume of timber of assortments of III. A/B quality class according to the Czech state norm (ČSN),

M_2 – volume of timber of assortments of IV. quality class according to the ČSN,

M_3 – volume of timber of assortments of V. quality class according to the ČSN (fuel wood),

A – area of species in model stand.

2.4 Profit from the Model Stand

The total profit does not include any tax or forest administration costs. For the research the profit means difference between costs and revenues. In case that result is negative there is loss and not profit.

$$P = R - C \tag{3}$$

3. Results

Firstly values of cuts were set up for calculations of revenues and costs. Actual prices for year 2012 were used, which could differ from one contractor to another one and which includes their profit margin. For wood assortments an average price for wood for the third quadrant last year 2012 were used. It is publicly available from the Czech statistical office (ČSÚ) webpage [4]. This price is of wood on roadside.

3.1 Allowable Intermediate Cut

According to regulation No. 84/1996 Coll., on forest management planning, for pure spruce and beech stands of higher site index there is percentage value of allowable intermediate cut including natural mortality for each decennial period and for full stocking (see Tab. 1 and 2). In the tables below there are values from the Mensuration and Growth Tables (MGT), which were summed for 10 years period for better comparison because in the MGT there are five-year periods stated. The values from the MGT for spruce up to 70 years are higher and then mainly lower according to the regulation for site index +1. In average the volumes are almost equal. Volumes are compared without that of age of 20 years because there is no data for allowable intermediate cut for spruce till the age of 30 years in the MGT. For beech both volumes are almost equal at sum. The volumes in the MGT are lower than regulation ones and they were used for the calculations. In this way overvaluation of incomes is potentially avoided.

3.2 Harvested Timber and Its Assortments

Volume of timber harvested from model stands were established according to real timber supply from the MGT as well as intermediate cut. All cuts were sorted by their diameter at breast height according to the Assortment tables [17 with groundwork by Dejmal 1986]. Bark deduction was made differently according to their diameter at breast height were used different coefficient. Example of calculation is in appendix No. 2. In case of spruce the used category was: standard for stacked and healthy wood with average technological quality standards. In case of beech followed category was used – standard for stacked and healthy wood with average technological quality standards including branch wood. Shares of assortments in the model stand are shared as followed (Tab. 3).

Tab. 1: Comparison of allowable intermediate cut for pure spruce stand with site index +1 (36)

Age	Timber to the top of 7 cm o.b. (in m^3/ha)	An allowable intermediate cut according to the regulation		An allowable intermediate cut according to the MGT (in m^3/ha)
		Timber to the top of 7 cm o.b. (in %)	Timber to the top of 7 cm o.b. (in m^3/ha)	
30	294	24	70.6	77.0
40	423	17	71.9	77.0
50	534	12	64.1	71.0
60	628	10	62.8	63.0
70	716	8	57.3	58.0
80	785	7	55.0	54.0
90	847	6	50.8	52.0
100	900	6	71.4	50.0
Total			503.9	502.0

Source: Calculated form the MGT and regulation No. 84/1996 Coll., About forest planning.

Tab. 2: Comparison of allowable intermediate cut for pure beech stand with site index +1 (36)

Age	Timber to the top of 7 cm o.b. (in m^3/ha)	An allowable intermediate cut according to the regulation		An allowable intermediate cut according to the MGT (in m^3/ha)
		Timber to the top of 7 cm o.b. (in %)	Timber to the top of 7 cm o.b. (in m^3/ha)	
20	118	-	-	-
30	220	21	46.2	70
40	303	21	63.6	75
50	381	18	68.6	68
60	454	16	72.6	60
70	527	13	68.5	56
80	591	11	65.0	54
90	655	10	65.5	56
100	711	9	64.0	55
Total			514.0	494

Source: Calculated form the MGT and regulation No. 84/1996 Coll., About forest planning.

Data was got from the MGT as values of total cuts from major harvest and allowable intermediate cuts. The Tab. 4 below presents example of the volumes for site index 36 and 16 for pure spruce stand and pure beech stand and equally mixed stand. Situation is similar in others site indexes. Total volume is almost the same for another species composition. There is a difference between volumes in various stand growth stages. Whereas the major harvest is in any situation higher in case of pure spruce stand, opposite situation is in all cuts before major harvest in case of pure beech stand or its mixtures.

Tab. 3: Assortment shares of different site indexes in case of spruce and beech

Assortment	Assortment shares of different site indexes										
	spruce										
	36	34	32	30	28	26	24	22	20	18	16
III. A/B grade	0.8510	0.8317	0.8054	0.8057	0.7773	0.7139	0.7219	0.6168	0.6156	0.6109	0.6102
V. grade	0.1219	0.1414	0.1684	0.1679	0.2034	0.2669	0.2588	0.3639	0.3650	0.3699	0.3706
Fuel wood	0.0272	0.0269	0.0262	0.0263	0.0193	0.0192	0.0193	0.0192	0.0194	0.0192	0.0192
	beech										
III. A/B grade	0.6645	0.6384	0.6360	0.6414	0.6414	0.6549	0.6371	0.6699	0.6538	0.6425	0.6213
V. grade	0.2828	0.3110	0.3140	0.3139	0.3139	0.3001	0.3179	0.2847	0.3020	0.3192	0.3408
Fuel wood	0.0526	0.0506	0.0500	0.0447	0.0447	0.0450	0.0450	0.0454	0.0442	0.0383	0.0379

Source: Calculated form the Assortment tables and the MGT used methodology above.

Tab. 4: Volume of cut in model stands of site index 36 and 16

Items with bark deduction	Volume of cut in site index 36 in m^3			Volume of cut in site index 16 in m^3		
	SM100	SM50	BK100	SM100	SM50	BK100
Volume of cut up to age 40 years (E_1)	146.94	149.08	151.22	0.00	0.00	0.00
Volume of cut over 40 years (E_2)	350.08	404.27	458.46	64.80	94.71	124.63
Major harvest (E_3)	820.62	745.54	670.47	240.97	183.00	125.03
Total	1,317.64	1,298.89	1,280.15	305.77	277.71	249.66
Volume of III. A/B grade of quality (M_1)	1,121.28	985.99	850.70	186.57	170.83	155.10
Volume of V. grade of quality (M_2)	160.55	261.31	362.07	113.32	99.20	85.09
Volume of fuel wood, VI. grade of quality (M_3)	35.81	51.595	67.38	5.88	7.67	9.47

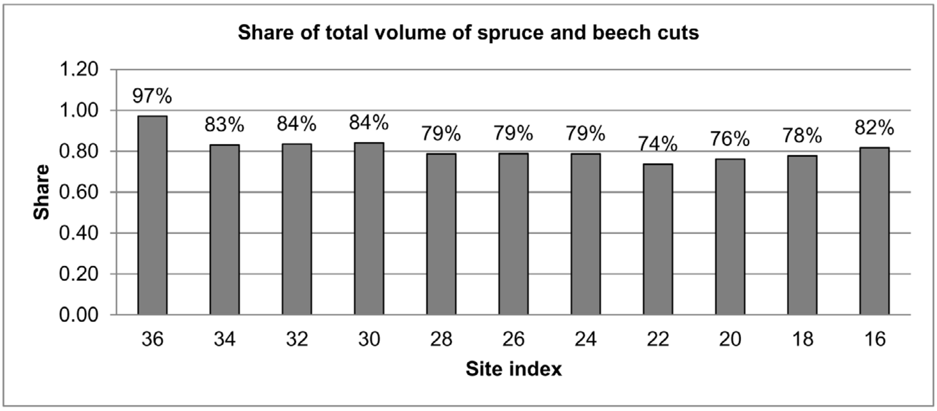
Source: Results from calculations according to the methodology.

Share of total volume of spruce and beech harvested timber is shown in the Fig. 1. In the model stand the amount of beech harvested timber does not decrease fewer than 74% of spruce harvested timber. In average beech harvested timber comprises about 81% of spruce harvested timber.

3.3 Costs and Revenues Calculations

Using the previous results of harvested timber and its assortments the costs and revenues for model stand in all site indexes and mixtures of spruce and beech were calculated (tab. 5 and 6).

Fig. 1: Share of total volume of spruce and beech cuts



Source: Results from calculations according to the methodology.

Tab. 5: Example of costs calculation for model stand in site index +1 (36) and SM100, BK0

C =	Costs of	Calculations	
$n_{sm}Ap_{sm}$	planting of spruce	4,000*1*(10 + 5)	60,000
$n_{bk}Ap_{bk}$	planting of beech	9,000*0*(8 + 4.8)	0
np_0	full-area site preparation	1*2,000	2,000
nAp_1	scything in lines	1*7*5,000	35,000
nAp_2	full-area scything	0*7*8,000	0
nAp_3	painting against spruce brows	4,000*(1+1+0.8+0.6+0.4)*1*1.2	18,240
nAp_4	painting against weevil	1*2,620*3	7,860
np_5	building and disposal of a fence	0*90	0
Ac_p	clearing – 30% reduction	1*9,600	9,600
$n_{lp}p_{lp}$	traps including control and remediation	16*1*600	9,600
$E_1Ac_{pr\ (sm)}$	thinning and skidding (age < 40 years)	146.94*1*1,020	149,879
$E_1Ac_{pr\ (bk)}$		151.22*0*780	0
$E_2Ac_{pro\ (sm)}$	thinning and skidding (age > 40 years)	350.08*1*660	231,053
$E_2Ac_{pro\ (bk)}$		458.46*0*660	0
$E_3Ac_{t\ (sm)}$	harvest cut and skidding	820.62*1*660	541,609
$E_3Ac_{t\ (bk)}$		670.47*0.684	0
Total costs (C)			**1,064,841 CZK**

Source: Calculation according to the equation (1)

Tab. 6: Example of costs calculation for model stand in site index +1 (36) and SM100, BK0

R =	Revenues of	Calculation	
$M_1\ A\ p_6$	timber of assortments of III. A/B quality class	1,121.277*1*2,098	2,352,439
$M_2\ A\ p_7$	timber of assortments of IV. quality class	160.557*1*860	138,079
$M_3\ A\ p_8$	timber of assortments of V. quality class	35.807*1*784	28,073
Total revenues (R)			**2,518,591 CZK**

Source: Calculation according to the equation (2)

Profit from model stand in site index +1 (36) and SM100, BK0 is:
P = 2,518,591 – 1,064,841 = 1,453,750 CZK

In the table 7 below you can see some other results for next two site indexes and different species compositions. Average costs for established plantation are 133,000 CZK per hectare in pure spruce stand and 237,000 CZK per hectare in pure beech stand.

Tab. 7: Profit from model stands in different site index and species compositions

Item	Cash flows for site index 36 (CZK)			Cash flows for site index 26 (CZK)			Cash flows for site index 16 (CZK)		
	SM100	SM50	BK100	SM100	SM50	BK100	SM100	SM50	BK100
Costs up to ten-year old forest with scything	132,700	184,750	237,232	132,700	184,750	237,232	132,700	184,750	237,232
Harvesting costs	932,141	905,640	879,139	487,403	432,300	377,198	211,408	189,591	167,773
Total costs	1,064,841	1,090,390	1,116,371	620,103	617,050	614,430	344,108	374,341	405,005
Total revenues	2,518,591	2,104,007	1,689,422	1,234,116	984,492	734,867	493,492	409,238	324,984
Profit (Loss)	1,453,750	1,013,617	573,051	614,013	367,442	120,437	149,384	34,897	-80,021

Source: Results from calculations according to the methodology.

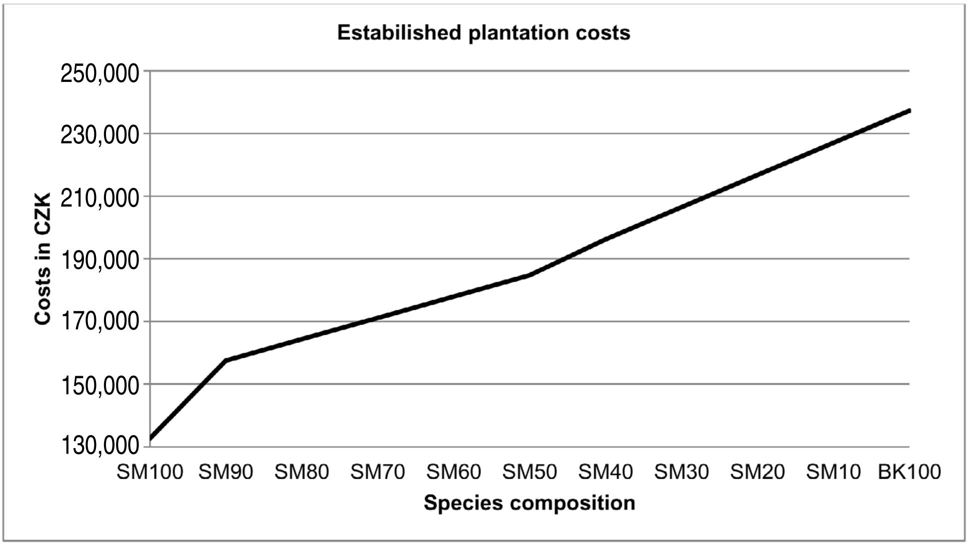
Established plantation costs grew 6% in average with growth 10% of beech in species composition. The main growth of the costs is between pure spruce stand and composition of SM90 and BK10, as seen in Fig. 2.

With calculation of weight average price of wood for spruce and beech stand using both the data from Tab. 3 and from profits from stands it is possible to confirm that the average is decreasing with site index of tree especially in spruce stands, whereas this decrease is not so noticeable in case of beech stand. The average price of spruce wood ranges in the highest site index (36) from 1,991 CZK/m^3 to 1,614 CZK/m^3 for the lowest site index (16) and in case of beech wood from 1,319 CZK/m^3 to 1,302 CZK/m^3. Relative change is in Fig. 3.

Sorting process influences profit from spruce stands more than beech stands because of significant differences in assortment prices.

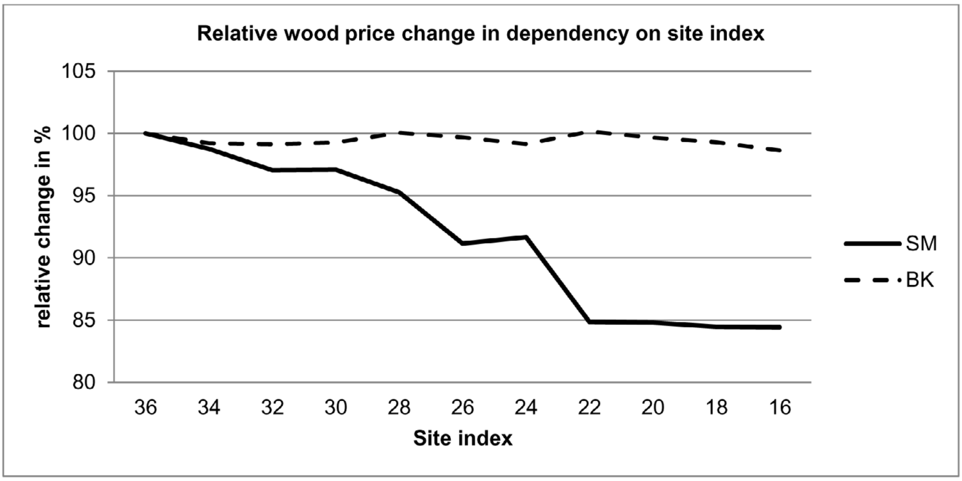
The average price of spruce wood reached 77% of III. A/B quality classification price and the average price of beech wood reached 90% of III. A/B quality classification price in the lowest site index. It responds to price differences between grades, where spruce wood price of fuel wood compared to III. A/B grade comprises 37% and 75% in case of beech.

Fig. 2: Established plantation cost for different species composition



Source: Results from calculations according to the methodology.

Fig. 3: Relative change of average wood price according to site index



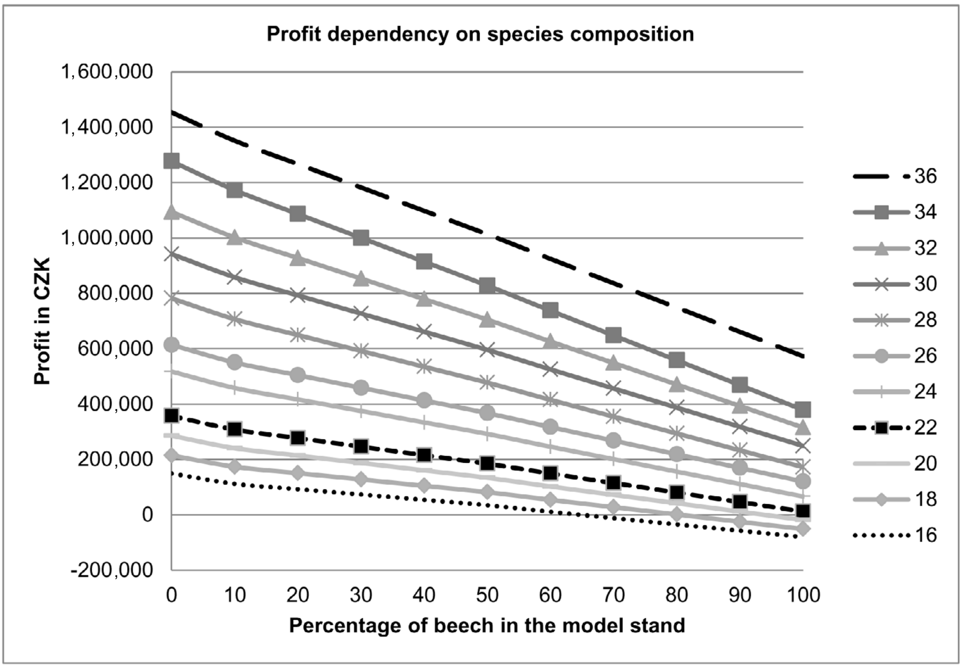
Source: Results from calculations according to the methodology

3.4 Profit Dependency on Species Composition

With the previously calculated prices results show that in stand with the highest site index the differences between profits in pure spruce stand and pure beech stand will be about 900,000 CZK, whereas in stands with the lower site index it will be 230,000 CZK.

The profit is decreasing linearly with dependency on species composition from SM100 to BK100. In lower site indexes this decrease is not so steep. In stands with composition BK80 with index 20 and lower there is loss. The Fig. 4 shows absolute values for all 121 model situations.

Fig. 4: Dependency of profit from forest on species composition



Source: Results from calculations according to the methodology.

Absolute relation between profit and species composition for various site indexes:
y = px + n.
E.g. for site index 36: y = -8713x + 1,445,667. For others site indexes coefficients are in Tab. 8.

Tab. 8: Coefficients for different site indexes

Site index	p	n
36	-8,713.0	1,445,667
34	-8,885.9	1,268,901
32	-76,917.0	1,085,997
30	-68,338.0	933,855
28	-60,036.0	774,034
26	-48,418.0	605,929
24	-44,193.0	509,601
22	-33,573.0	348,967
20	-29,479.0	277,641
18	-25,661.0	206,535
16	-22,001.0	141,301

Source: Results from calculations according to the methodology.

n – profit from the model stand,

p – differences between profit from pure spruce stand and pure beech stand divided by beech composition.

In case of mixture SM40 and BK60 at site index 36 the profit is approximately:

y = 60x(-8,713)+1,445,667 = 922,877 CZK

Tab. 9: Coefficients for different site indexes

Site index	p	n	R^2
36	-0.0083	2.3427	0.9989
34	-0.0088	2.0330	0.9987
32	-0.0085	2.2327	0.9987
30	-0.0087	2.1992	0.9986
28	-0.0085	2.1124	0.9982
26	-0.0077	1.9676	0.9978
24	-0.0080	1.9175	0.9975
22	-0.0068	1.7036	0.9966
20	-0.0066	1.6182	0.9958
18	-0.0063	1.5109	0.9946
16	-0.0006	1.3892	0.9922

Note: R^2 – coefficient of determination

Source: Results from calculations according to the methodology.

It is possible to express the graph (Fig. 4) relatively as a relation between profit and species composition for various site indexes:

$y = px + n$

E. g. for site index 36:

$y = -0.0083x + 2.34$

Conclusion

Nowadays matters about forest stability are very important related to the climate changing, which could be met by owner or manager. Many scientists show an alarming condition of some of our forests and possible threats caused by biotic and abiotic agents.

The owner or manager can change species composition and influence the future profit from cut wood. From this point of view this profit is interesting gain from economic forest function because the others functions (as ecological and social) are not enough profitable yet in the Czech Republic.

The aim of this research was to prove that natural species composition is not as profitable as spruce monoculture in example of 4th fvz (forest vegetation zone in nutrient stations). The profit from pure spruce stand is higher, so that beech stands are not lucrative for owners. Any state subsidiaries or other motivation tools for changing species composition were not considered.

On the model stand possible costs and revenues for all possible site indexes and various species compositions from pure spruce forest through mixtures of beech to pure beech forests were calculated. The cash flows were compared. The model stand includes 100 groups differ in age of one year. The same rotation period of 100 years and regeneration period of one year were considered for spruce and beech stands.

It was set up a number of silviculture and logging activities and the costs were calculated. Total volume of cuts was used from MGT (Mensuration and Growth Tables) for all site indexes with bark deduction. Revenues were calculated for wood assortments. There are used prices of forestry contractors including their profit margin and average price for wood assortments for the third quarter last year 2012 publicly available from the Czech statistical office related to the roadside.

The research was based on three hypotheses. Firstly the profit from the pure spruce stand is higher than the profit from pure beech stand. **The revenues from spruce stand were 2,518,491 CZK, which is 1.5 times higher** than beech ones, which were 1,689,422 CZK in site index +1 (36). The costs for establishing plantation did not differ in absolute values so much. The difference between the revenues is caused mostly by **different price for species** assortments according to their quality. **The volume of harvested SM and BK wood does not differ so significantly** mainly in higher site indexes in pure stands or their mixtures too. In case of SM100 the volume of total cut was 1,317.64 m^3, SM50, BK50 it was 1,298.89 m^3 and BK100 it was 1,280.15 m^3 (for site index 36). The volume of cuts is almost the same, there is a difference between the volume of wood harvested in forest group with age up to 40 years, older than 40 years and major harvest, where the major harvest is in any situation higher in case of pure spruce stand. Opposite situation is in all cuts before major harvest in case of pure beech stand or its mixtures.

Profitability of potential investment, which presents costs to the pure spruce stands with the highest site index +1 (36) is 234%, whereas profitability of beech stand in the same site index is only 151%.

The second hypothesis was confirmed only partly. It is true that lower SM composition causes lower profit. However, this is not caused by rising costs for established plantation, which are twice times higher in case of beech. **Price differences of wood assortments have a bigger impact on the profit.** Wood price is affected by various factors, which could be target for future research. The calculated average price for site index +1 (36) in case of SM is 1,990 CZK/m^3 and for BK 1,319 CZK/m^3. In comparison to Bartoš et al. [1], results from this research do not differ so significantly in case of BK. They got beech wood price 1,238 CZK/m^3 and spruce price 1,273 CZK/m^3 which differs more, whereas the differences between used prices were not so big. It could be influenced by various damages which could lower price and which were not taken in consideration in the model situation. Level of risk of lower profit could be next topic for following research.

Average costs for established plantation including the first 30% clearing were 132,700 CZK in case of pure spruce stand and 237,232 CZK in case of pure beech stand. It could be decreased by lower amount of silviculture operations, but main cost comprises of planting. All the cash flows are related to the area of 100 ha, but all activities are done within one year. So, the results could be understood differently. The costs, revenues and profit are cash flows of 1 ha stand during 100 years.

The third hypothesis confirmed that **amount of profit is influenced by species composition** with certain amount of silviculture operations. Profit is a linear function of changing species composition. Intensity of silviculture operations could lower costs, but on the other hand it could lower volume of felling too. But this was not object of this research.

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Appendix 1: Price list of operations and wood

Operations*	**Price in CZK**
p_0 – full-area site preparation (1 ha)	2,000
p_{sm} – plant price SM (12-25 cm) and Whole planting price for one plant	10 + 5
p_{bk} – plan price BK (36-50 cm) and Slit planting price for one plant	8 + 4.8
p_1 – price of scything in lines 50 cm for 1 ha	5,000
p_2 – price of full-area scything for 1 ha	8,000
p_3 – price for painting against spruce brows for 1 plant	1.2
p_4 – price for painting 1 ha against weevil – SM – work (1,000 CZK); material (Primor, 1 kg on one ha; 1,620 CZK)	2,620
p_5 – price of running meter of fence and disposal	80 + 10
c_p – costs of clearing on 1 ha (30% reduction)	9,600
$c_{pr,sm}$ – costs of thinning and skidding of 1 m^3 of softwood	660 + 360
$c_{pr,bk}$ – costs of thinning and skidding of 1 m^3 of broadleaves	420 + 360
$c_{pro,sm}$ – costs of thinning and skidding of 1 m^3 of softwood in forest older than 40 years	300 + 360
$c_{pro,bk}$ – costs of thinning and skidding of 1 m^3 of broadleaves s in forest older than 40 years	300 + 360
p_{lp} – price of one trap includes its control and sanation (one piece is required two times a year on each 5 hectares in forests younger then 40 years)	600
$c_{t,sm}$ – costs of harvest cut and skidding of 1 m^3 of and softwood	300 + 360
$c_{t,bk}$ – costs of harvest cut and skidding of 1 m^3 of and softwood and broadleaved species	324 + 360
Wood grade of quality**	
p_6 – SM – III. A/B quality classification according to the Czech state norm (ČSN)	2,098
p_7 – SM V. quality classification according to the ČSN	860
p_8 – SM VI. quality classification according to the ČSN – fuel wood	784
p_6 – BK – III. A/B quality classification according to the ČSN	1,453
p_7 – BK V. quality classification according to the ČSN	1,050
p_8 – BK VI. quality classification according to the ČSN – fuel wood	1,086

Note: *Prices of contractors includes its profit margin; ** Average prices in third quarter of year 2012 (ČSÚ) as a price on roadside [4].

Appendix 2: Example of the SM sorting, site index +1 (36)

Age	Stock (m^3)*	Cut (m^3)*	$d_{1,3}$ with bark (cm)*	Bark deduction**	Cut with bark deduction (m^3)	Volume of harvested assortments with bark deduction (m^3)						
						III. A				III.B	pulp wood	fuel wood
15	82.00					1.b	2.a	2.b	3.	1.b		
20	152.00		11.90							0.00	0.00	0.00
25	223.00	34.00	14.30	0.8777	29.84					6.57	22.98	0.30
30	294.00	43.00	16.50	0.8826	37.95					17.08	20.12	0.76
35	358.00	45.00	18.60	0.8872	39.92					17.97	21.16	0.80
40	423.00	44.00	20.70	0.8914	39.22	0.78	16.87			8.63	12.16	0.78
45	477.00	42.00	22.70	0.8951	37.59	0.75	16.16			8.27	11.65	0.75
50	534.00	39.00	24.60	0.8979	35.02	0.35	23.46			4.20	6.30	0.70
55	582.00	37.00	26.40	0.9005	33.32	0.33	22.32			4.00	6.00	0.67
60	628.00	35.00	28.10	0.9026	31.59		15.48	9.79		2.21	3.48	0.63
65	674.00	33.00	29.90	0.9049	29.86		14.63	9.26		2.09	3.28	0.60
70	716.00	31.00	31.50	0.9061	28.09		13.76	8.71		1.97	3.09	0.56
75	753.00	30.00	33.10	0.9073	27.22		4.63	7.89	10.62	1.36	1.91	0.82
80	785.00	29.00	34.70	0.9084	26.34		4.48	7.64	10.27	1.32	1.84	0.79
85	821.00	28.00	36.10	0.9091	25.45		4.33	7.38	9.93	1.27	1.78	0.76
90	847.00	28.00	37.60	0.9098	25.47		3.82	5.60	12.74	1.27	1.27	0.76
95	879.00	27.00	39.00	0.9108	24.59		3.69	5.41	12.30	1.23	1.23	0.74
100	900.00	28.00	40.40	0.9118	25.53		3.83	5.62	12.77	1.28	1.28	0.77
Major harvest	900.00	900.00	40.40	0.9118	820.62		123.09	180.54	410.31	41.03	41.03	24.62
TOTAL		1,287.00	-	-	1,317.64	2.21	270.55	247.84	478.92	121.73	160.55	35.81

Note: * Values from the MGT [3]; **Bark deduction was interpolated so that it responds the best to the $d_{1.3}$ (diameter at breast height) [17].

Abstract

FINANCIAL IMPACT IN CASE OF INVESTMENT TO THE FOREST PROPERTY AS A RESULT OF DIFFERENT TREE SPECIES COMPOSITION IN THE CZECH REPUBLIC

Pavlína Köhler, Vlastimil Vala

The spruce covers the largest area 44.7% in the Czech Republic, but its natural representation was 11.2%. Forest owners and managers are motivated to change their species composition. But the change will have an economic impact on their property. The aim of this research is to create a model of dependency of total profit from forest stand depending on its composition and prove that if the species composition is changed in favour of beech, the financial impact will be significantly negative. The model has area 100 ha with 100 forest groups which differ in age of one year. All the silviculture and logging activities were done within one year for eleven site indexes. Total volume of cuts was used from the Mensuration and Growth Tables. Prices of contractors including their profit margin and wood price from the Czech statistical office were used for revenues and costs calculations related to the roadside. The profit from the pure spruce stand is higher than profit from pure beech stand. The costs for establishing plantation did not differ in absolute values so much. The difference between revenues is caused mostly by different price for species assortments according to their quality. The profitability of potential investment, which presents costs to the pure spruce stands with the highest site index +1 (36) is 234%, whereas profitability of beech stand in the same site index is only 151%. Profit is a linear function of changing species composition. The localities with the lowest site index was it the red.

Key Words: *Profit, spruce, beech, profitability, cost, revenues.*

JEL Classification: *C20, Q23, L73.*

DOI: *10.15240/tul/001/2014-4-006*

MARKET ORIENTATION AND STRATEGIC BEHAVIOUR AT HIGH-TECH COMPANIES

Lucie Kaňovská, Eva Tomášková

Introduction

Market orientation is an approach based on marketing conception, which was introduced by [16]. Although the principle of market orientation has been known for sixty years, detailed analysis only began at the beginning of the 1990s. In 1990, the Journal of Marketing published the results of two studies sponsored by the Marketing Science Institute. The studies were made by [35] and Narver and Slater [43]. These two pieces of research had a substantial impact on the formation of a new approach to marketing and subsequent studies on market orientation and took the initial steps towards creating a definition of market orientation. The definition by Kohli and Jaworski was totally different to the one by Narver and Slater. The definition by Kohli and Jaworski perceives market orientation as an implementation, namely as an instrument for strategic decision-making. Alternatively, the definition by Narver and Slater perceives market orientation from a business learning and corporate culture point of view.

The objective of this paper is to assess the relationships between market orientation and strategic behavior at high-tech companies. It begins with a review of currently relevant literature and followed by an outline of our "New Method" for measuring market orientation at high-tech companies. Results from our research are illustrated in the findings section. The paper concludes with a discussion on research contributions, managerial implications and suggestions for further research.

1. Literature Review

There have been many studies dealing with market orientation published. Furthermore, these studies may be divided into four aims: The first is to find the best definition of market orientation; the second aim is to prepare the optimum method of measuring market orientation; the third is to find how best to implement market orientation in a company; the final aim is to find all factors which are influenced by or have an influence on market orientation. However, some of the previously published studies contain different approaches. All definitions of market orientation are divided into six stages: the decision process (e.g. [50], [23], [24]); information gathering (e.g. [35], [36], [33], [2], [62]); corporate culture (e.g. [43], [6], [27]); strategic management (e.g. [49], [11], [42], [45], [28]); customer orientation (e.g. [14], [51], [15]; and stakeholder orientation (e.g. [30], [17], [3], [54]). The method for measuring market orientation was prepared in accordance with this approach.

What individual schools of thought agree on is that market orientation contains the acquisition and distribution of market information. Most available studies more or less agree that customer orientation, competitor orientation and inter-functional coordination are the most important elements of market orientation. Although customers and competitors represent the most important stakeholders, the range of stakeholders should not be restricted to just these two groups. Other stakeholders currently extend the number of market orientation elements. We can therefore define market orientation as a means which enables managers to focus on external and internal elements and activities, which influence the activity of an organization leading to performance increase. More than ninety studies have confirmed the positive impact of market orientation on business performance. Market orientation has a positive relationship with product quality, which in turn is positively related to new product performance. [48]

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Measurement of market orientation is an easy tool for top managers. The chosen method for the measuring of market orientation must: help managers to detect all elements of market orientation; find out if a company is oriented on all elements of market orientation; ascertain whether a company has all necessary information and knowledge; and whether a company can quickly implement the information gathered into the company strategy and monitor the attainment of goals.

1.1 Market Orientation and Strategic Behaviour

The present conception of definitions (see above) shows that market orientation is perceived as a method for gaining important information useful for the decision-making process. In addition, it helps to measure how the information is distributed within a company. Moreover, market orientation is able to answer a lot of questions and can help to point out some company weaknesses and possible threats as well. It is necessary to know the barriers connected with implementation of market orientation. The information gathered, when well evaluated, can be helpful in making the correct management decision. For this reason, researchers try to define the barriers of market orientation implementation. These barriers are divided into barriers of internal environment, barriers of branch environment and barriers of external environment.

Elements of external environment may be very difficult to influence for companies. Politics, the economy and technologies are named as the main elements of the external environment. Economic systems connected with barriers are economic cycles, an open economy and economic development. Technology is the second significant part of influence in the collection and dissemination of market orientation. Companies have to be more proactive in their strategic approach. Government connected barriers are restrictions, protections, political regimes and complicated and wide-ranging rules. [56]

The elements of branch environment are end customers, distributors, competitors and suppliers. They play the main role in branch environment. The main barriers connected with elements of branch environment are: quality and quantity of branch stakeholders; high quantity and high quality of final customers; distributors and suppliers of interest to a company. A high quantity and quality of competitors also represent barriers for a company. [55]

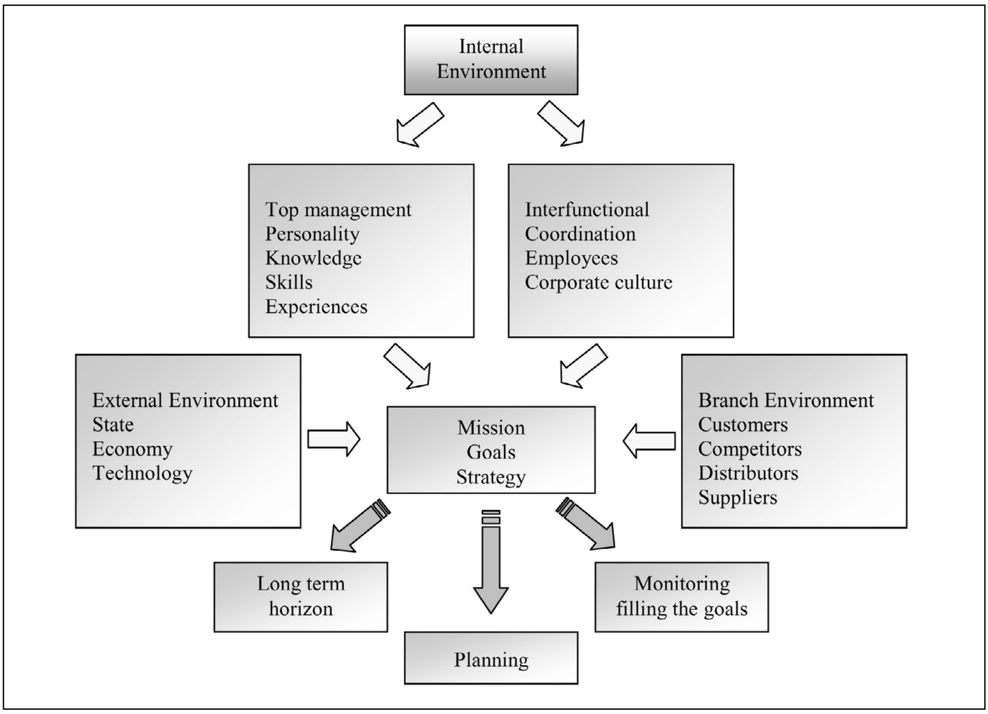
The internal environment of market orientation may be changed by a company. These barriers can be divided into two main areas. The first area involves barriers connected with top management and its personality, skills, knowledge and experience. [28] emphasises that a manager's knowledge, skills and commitment may be one of the main barriers to market orientation. However, it is very difficult to measure the right quantity and quality of knowledge, skills and commitment and compare those with that of others. Every company and also every situation need specific skills and commitment. The most important thing is that managers are guided as to the implementation of market orientation. The managers should want to gain new information and knowledge. [30] stressed that managers play the main role in implementing of market orientation conception. If the managers do not believe that market orientation can help a company, the conception of market orientation is not enforceable. These barriers are connected only with members of top management and can be changed only by top management. Generally, a change in thinking or attitude is often very difficult. *Sustaining the organizational effectiveness is an important factor for organizational development* [1]. The second part of internal barriers is connected with all employees of a company. The situation in a company can be changed only by mutual cooperation between top management and employees. There are recognized barriers connected with employees and corporate culture. Employees are the most important asset of a company, but an employee can create barriers to market orientation, e.g. interdepartmental conflict. The goal of a company should be to have highly qualified and satisfied employees with a good sense of teamwork. They also have to be more flexible with less formalization, centralization and departmentalization. Corporate culture influences the system, structure, procedure and communication in a company. Corporate culture has an impact on employees [55]. Managers, employees and corporate culture introduce the core of inter-functional coordination.

Each significant element for market orientation influences the core of strategic management and strategic decision-making. Determination of mission, choice of goals and selection of the best strategy are the core of this strategy management. It is necessary to determine a clear and feasible conception of its mission. Following this, it is possible to determine goals and to choose the best strategy to fulfil them. Company activities will then be done more systematically and the company should be more successful. A success and ability *based conception represents an approach to viewing the behavior of the company from the point of success, strategy, competitiveness and competition.* [63]

Mission, goals and strategy influence every activity in a company and have a major influence on the creation of relationships with all stakeholders. Mission, goals and strategy are significant instruments for shareholders. Shareholders can find out if the company wants to stay for a long time on the market according to their mission and goals. [30] mentioned that companies without mission, goals and strategy do not apply strategic management which in turn leads to only short-term ambitions. These companies want to make money and then leave their position on the market. Mission, goals and strategy influence managers during planning. To have perfectly prepared plans means that a company knows what information is needed, which activities are necessary and how much time the activity consumes and if it is perfectly under control. A high quality planning system has the potential to increase business performance. [47]

The monitoring of goal attainment contributes to verification of the choice of strategy and fulfilment of the mission. New information and market opportunities can trigger the need for goal alteration, a situation to which managers must react accordingly. The monitoring of goal attainment closes the cycle of strategic management. As shown in Figure 1, we describe the influence of all elements of market orientation on strategic behaviour.

Fig. 1: Influence of market orientation elements on strategic behaviour



Source: authors

Top company managers need to not only attain the most important information, but also to recognize all significant information and implement it into their strategy decisions. Simultaneously, top managers have to continuously control company strategy. Market orientation also helps to find out this useful information.

The aim of market orientation is the same as that of strategic management. The goal is to be successful. Market orientation provides important information for strategy decision-making. Market orientation can provide new outlooks on a company from every manager or every worker. Managers have the capacity to monitor and influence situations throughout the decision-making process. Market orientation involves all substantial elements and shows the interconnection of these elements. For this reason, market orientation can significantly contribute to the decision-making process.

2. Research Methodology

We have prepared a "New Method" for measuring market orientation through analysis of some of the failings of presently utilised methods. For this method the factors, which were determined in the antecedent analysis of all above-mentioned problematic areas of market orientation, were also considered as well. Furthermore, we tried to eliminate the failings criticized in other methods.

The model of the New Method was constructed after analysis of other 25 methods in 2005 by Tomášková. The methods for measuring market orientation were obtained from [35], [43], [33], [40], [14], [13], [22], [8], [21], [46], [38], [25], [15], [37], [44], [6], [10], [31], [19], [26], [34], [60], [20], [59], [3]. Some of these methods are in line with other methods, e.g. methods constructed by [60] and [20]. Some of these methods are based only on one element of market orientation, e.g. the method by [26] was based only on customers. Furthermore, some of these methods were limited by their construction methodology, e.g. MARKOR by [36] and MKTOR by [43] leaves aside Churchill methodology.

Based on relevant methods [35], [22], [38], [19], [34], [3] items for measuring market orientation were created. The New Method involves items related to external environment, final customers' orientation, distributors' orientation, competitors' orientation, and suppliers' orientation. They reflect knowledge of the decision-making process and inter-functional coordination. The structured items were designed for measurement of market orientation. These items were rated on seven-point Likert-type scales, where 1 = highly disagree and 7 = highly agree. The New Method includes items of external environment (4 items), items of branch environment (24 items) and items of internal environment elements of a company (24 items).

Cronbach alpha was used for measuring the validity of the New Method. The final value of Cronbach alpha for the entire measurement of the New Method of market orientation is 0.893. It means the New Method can be used for the measurement of market orientation.

3. Hypotheses

Six main hypotheses were included in the research project. The hypotheses related to the aim of this paper are H1, H2 and H3.

H1: High-tech companies are more oriented on their customers than on competitors.

H1a: Customer orientation has no influence on business performance.

H1b: Competition orientation has no influence on business performance.

The relationship between market orientation and final customers appears in all relevant studies. Moreover some studies focused on one element of market orientation, namely only final customers [21], [26], [34] or [60]. Customers are seen as a basic precondition of market orientation. Generally, company reaction to customer needs and wishes is proof of market orientation.

Competition is the most often mentioned element of market orientation. The findings [10] show that competition orientation achieves higher correlation in the relationship with business performance than customer orientation. Based on [31], only customer orientation influences business performance. On the contrary, [32] proved that business performance is equally influenced by customer orientation and competition orientation. Although studies show different findings, it is a commonly held belief that customer orientation and competition orientation is the most important element of market orientation.

H2: Supplier orientation achieves the lowest value from all evaluation elements.

Not long ago supplier orientation was included in the models of market orientation with the help of theoretical discussions held by [18] and [3]. The use of suppliers as an important element of market orientation in practical research was confirmed by the research project of [54], based on research conducted by companies working in power engineering companies in the Czech Republic. According to results from the above-mentioned research, supplier orientation is an important element of market orientation, but in relation to other elements, its importance has the lowest level.

Hypothesis connected market orientation with strategic behavior is H3.

H3: High-tech companies with high levels of important information attainment and implementation into the decision-making process increase business performance more than companies with a low level of important information attainment and implementation into the decision-making process. Reasons for creating this hypothesis are mentioned above.

4. Results

The research project was titled "Research on the implementation of market orientation at High-tech Companies" and four people were included in our research team. The New Method was used for measurement of market orientation.

The research project involved data obtained during the first half of 2009. The sample consisted of companies classified as High-tech companies according to the CZ NACE codes utilized by e.g. The Ministry of Industry and Trade of the Czech Republic. Only manufacturing companies operating mainly in the mechanical and electric engineering sectors (NACE codes 3x xxx) were selected for the research project. The selection was made using the database of the Kompass Czech Republic Company. The items were intended for the evaluation of top managers from high-tech companies.

Orientation of high-tech companies was mostly motivated by the effort to ascribe the companies with some special characteristics, e.g. production of high value-added products, highly qualified employees, application of the latest scientific findings and technical and technological information. High-tech products should have high quality and innovative value. They can also cause many important changes in the product life cycle. Finally, they are typical for their high investments in R&D. Additionally, high-tech products are very closely connected to biotechnology, material technology, information technology, solar and nuclear energy, etc. Many governments and private companies have invested a lot of money in the above-mentioned fields to achieve some progress.

A total of 450 companies were included in the research. The high-tech companies were contacted over the phone and asked to fill in a web-based questionnaire. The complete database was analysed by using standard statistical methods as well as other sophisticated techniques. Incomplete questionnaires were discarded. Data from 88 companies was used for further processing, which is an overall response rate of 19.6%. The data was obtained from the research and was divided into two main groups for this section. The first group of data was focused on research of market orientation at high-tech companies generally. The second was focused on strategic behaviour at high-tech companies.

4.1 Market Orientation at High-Tech Companies

This part involves the main results from all of the research. Table 1 reports means and standard deviations for elements of measurement of market orientation.

The item inter-functional coordination (5.62) reached the highest value in our research. The above mentioned results confirm that inter-functional coordination is very important for high-tech companies. Standard deviation for distributors reached a very high value (2.12) in comparison with others. It shows important discrepancies among answers between respondents.

Second position was obtained by the final customers item (5.42). Reflecting knowledge of the decision-making process was in third highest position (5.26). On the contrary, respondents indicated the items with the lowest value were suppliers (4.74), external environment (4.76) and competitors (4.77). Surprisingly, the three lowest items achieved a very similar value, almost exactly the same.

Tab. 1: Means and standard deviations of market orientation degree by individual elements of measurement. (0 – low value, 7 – high value)

Elements of measurement of market orientation	Mean	SD
I. External environment (4 items)	4.76	1.60
II. A Final customers (7items)	5.42	1.28
II. B Competitors (5 items)	4.82	1.46
II. C Distributors (7 items)	5.06	2.12
II. D Suppliers (5 items)	4.74	1.51
III. A Reflecting knowledge of the decision-making process (5)	5.26	1.25
III. B Inter-functional coordination (14)	5.62	1.19

Source: authors

Tab. 2: Differences in customer orientation and competitor orientation

Element	Low value of MO (No. answers)	Medium value of MO (No. answers)	High value of MO (No. answers)
Customer orientation	0	16	72
Competitor orientation	0	40	48
Distributor orientation*	4	16	55
Supplier orientation	3	42	43

*13 respondents noted that they do not have distributors

Source: authors

Results from the research show that the importance of elements of branch environment is different. High-tech companies perceive customers, competitors, distributors and suppliers differently. As shown in Table 2, customer orientation reached a higher value at market orientation than competitor orientation.

Further detailed analysis confirmed the hypothesis H1. High-tech companies have higher customer orientation than competitor orientation. The reason could be that many high-tech companies develop and produce specific products according to customer needs and wishes. Additionally, they often use special protection for their products via patents and marks. For this reason, competitor orientation is usually not so crucial. Hypothesis H1 was confirmed.

Analysis of the influence of customer orientation and competition orientation on business performance was also conducted (see Table 3).

H1a: Customer orientation has no influence on business performance.

H1b: Competition orientation has no influence on business performance.

Tab. 3: Chi-square and p-value for H1a and H1b

Element	Chi-square	p-value
Customer orientation	4.433	0.03525
Competitor orientation	4.959	0.0446

p-values all significant at $p<0.05$

Source: authors

Hypotheses H1a and H1b are rejected. Therefore, customer orientation and competition orientation have an influence on business performance.

Results from the research show that supplier orientation has the lowest level of all elements of branch environment. The hypothesis H2 was confirmed.

4.2 Strategic Behaviour at High-Tech Companies

The proper starting point for management decision-making is to gather the relevant information and determine what you know, what data has been gathered and also what data has not been gathered. Additionally, it is necessary to decide what paths to choose. Therefore, the items important for strategic behaviour were chosen from the questionnaire. The chosen items were divided into two parts: The first part involves ways of working with essential information for strategic company decision-making; the second part involves ways of using acquired information in a company.

Firstly, the items focused on the ways of working with essential information for strategic decision-making are presented below. Therefore six most important items were selected, namely:

1) We regularly identify important opportunities and threats, which could have an impact on business.
2) We regularly monitor the development of demands of current and prospective customers.
3) We know the strong and weak points of our main competitors.
4) We pay attention to further education of our employees.
5) We take a positive approach to innovations.

Items 1, 2 and 3 from the MOS method by [38] were implemented in the New Method. Items 4 and 5 were newly created. The level of market orientation is also determined by the respondent's attitude towards the monitoring of external elements, which can influence company activity. Naturally, information about final customers is very important for companies. Therefore it is necessary to regularly monitor customers' current needs, wishes and opinions, as well as potential tendencies of further development. Not only because the analysis of the current state of competitors is important, but also because to maintain long-lasting competitiveness requires the ability to predict the potential behavior of competitors with the help of the information obtained from research. Knowledge is very important, so it is necessary to educate all employees in a company constantly and use the latest methods of management and latest technologies in production. The results of the research are illustrated in Table 4.

Tab. 4: Results selected items at high-tech companies (0 – highly disagree, 7 – highly agree)

Item	Mean	SD
We regularly identify important opportunities and threats which could have an impact on business.	5.07	1.31
We regularly monitor the development of the demands of current and prospective customers.	5.77	1.16
We know the strong and weak points of our main competitors.	5.37	1.28
We pay attention to the further education of our employees.	5.74	1.26
We take a positive approach to innovations.	6.06	0.96

Source: authors

The highest value was obtained by the item evaluating a positive approach to innovations. This result was expected at high-tech companies. The lowest value was reached by the item about identification of important opportunities and threats. It is time and money consuming to regularly identify all opportunities and threats, which are significant to a company.

A Spearman correlation coefficient r was used for confirmation of the hypothesis. The value of the above five mentioned items was averaged for each high-tech company from research and correlated with its business performance. Coefficient r is 0.99905. It means that dependence between obtaining important information and business performance is high.

Secondly, the items expressing the ways of using the obtained information in a company are described. All items were classified as the elements reflecting knowledge of the decision-making process. The last two items were added from inter-functional coordination and the element of measurement of market orientation. The following 7 items were selected for this section, namely:

1) We implement information obtained into our decisions.
2) We offer products reflecting the latest demands and wishes of customers (distributors).
3) We focus on gaining customers, for whom we can achieve a competitive advantage.
4) We are faster in responding to the wishes of customers than our competitors.
5) We respond as fast as possible to the marketing developments of competitors.
6) Every worker is informed of the main objectives of the organization and knows how to contribute to their achievement.
7) We prefer reaching long-term goals to short-term ones; the achievement of a certain market share to financial goals.

Item 3 from the method processed by [19] was implemented into the New Method; item 4 on the basis of the method by [22] was created and item 5 from the MOS method [38] was implemented into the New Method. Item 7 from the method created by [33], was also implemented into the New Method. Items 1, 2 and 6 are newly created. The first two new items (1 and 2) respond to the information obtained. A successful company should not only try to obtain important information, but also try to be able to respond to it. It is difficult to evaluate if the response to information obtained was appropriate or not. The last new item is related to the relationship between managers and employees and simultaneously to the approach of an employee to a company. The Table 5 includes the items reflecting knowledge of the decision-making process.

Tab. 5: Means and standard deviations of market orientation degree by individual elements of measurement (0 – highly disagree, 7 – highly agree)

Item	Mean	SD
We implement acquired new knowledge to our decisions.	5.69	1.11
We offer products reflecting the latest demands and wishes of customers.	5.67	1.22
We focus on gaining customers for whom we can achieve a competitive advantage.	5.62	1.18
We are faster in responding to the wishes of customers than our competitors.	4.90	1.36
We respond as fast as possible to the marketing developments of competitors.	4.33	1.37
Every worker is informed of the main objectives of the organization and knows how to contribute to their achievement.	5.69	1.17
We prefer reaching long-term goals to short-term ones and the achievement of a certain market share to financial goals.	5.34	1.30

Source: authors

Respondents' answers for three items are almost exactly the same (twice 5.69 and once 5.67). The respondents noted that they often try to implement the new knowledge acquired into their decisions; they try to inform every worker about company goals and fulfil them and they prefer to manufacture products according to customer needs and wishes. On the contrary, the lowest value was reached by two items evaluating the speed of company activity to marketing developments of competitors and offers in comparison with competitors.

A Spearman correlation coefficient *r* was used for confirmation of the hypothesis H3 as well. The value of seven above mentioned items were averaged for each company and correlated with its business performance. Coefficient *r* is 0.99919. It means that dependence between obtaining important information and business performance is high.

The positive influence of gaining information and reflecting knowledge on the decision-making process is confirmed through chi-square. Chi-square and p-value coefficient at $p<0.05$ is evident in Table 6.

Tab. 6: Chi-square and p-value at H7

Strategic behaviour	Chi-square	p-value
Obtaining information	5.030	0.0249
Reflecting knowledge of the decision-making process	3.911	0.0479

p values all significant at $p<0.05$

Source: authors

Hypothesis H3 is also confirmed.

5. Discussion

Generally, high-tech companies are mostly very confident that they are highly flexible. However it is not true in all situations. We can find some discrepancies here such as the low rating of the items "We respond as fast as possible to the marketing developments of competitors" (4.33) and also "We regularly identify important opportunities and threats, which could have an impact on business" (5.07). It is important to have sufficient information for the evaluation of all opportunities and threats, which means being well informed about new competitors, their products or suppliers. It is possible to assume that employees do not have all necessary information for the decision-making process. Therefore, the high rating of the item "Every worker is informed about with main objectives of the organization and knows how to contribute to their achievement" (5.69) needs further debate.

The results show that high-tech companies are mainly oriented on customers. Competition orientation is in third position according to respondents. It is also confirmed in the following items: "We regularly monitor the development of the demands of current and prospective customers" (5.77) and "We offer products reflecting the latest demands and wishes of customers" (5.67) versus items "We know the strong and weak points of our main competitors" (5.37) and "We respond as fast as possible to the marketing events of competitors" (4.90). The findings are probably because high-tech companies specialize in production of special technologies and products. They might not have so many competitors in their field. If a company has know-how, then its position could be quite strong and not so easily threatened by other companies. However, it is essential to gain information about all company stakeholders, not only about customers, but also about competitors, suppliers, etc. This discrepancy shows that high-tech companies have certain gap in their knowledge, which means they might not use data precisely.

The item "We take a positive approach to innovations" achieves the highest level (6.06) from all items used in our questionnaire. For success in high-tech industry it is a basic necessity to be creative and have a positive attitude to risk.

In contrast to the conclusion by [7], our research confirmed that implementation of market orientation contributes to increased business performance. Market orientation is not, however, only seen as the source for gaining information, it involves dissemination this information throughout a company, implementation into the decision-making process and careful consideration of inter-functional coordination.

Our findings show that market orientation has significant influence on strategic behavior. It is possible to say that strategic behaviour is a part of market orientation. This strategic behaviour can be divided into, firstly, obtaining information for strategic company decision-making and, secondly, ways of using the information gathered in a company. Both these parts have significant influence on business performance.

5.1 Research Contributions

The crucial factors for companies that want to succeed in global competition are knowledge and the ability to use that knowledge in the best possible way [41]. According to the above all knowledge can lead to success. This article extends knowledge to market orientation. Three significant contributions are made to the existing knowledge of market orientation in high-tech companies. Firstly, market orientation is analyzed in detail at high-tech companies. The sample of companies concluded in the research project is significant. The results show that the level of market orientation at high-tech companies is high. The finding is in line with our perception that companies, which do business in highly turbulent environments, have high market orientation for their never-ending need to adapt to new situations. The finding indicates that high-tech companies have a high level of positive approach to innovation. Our findings clearly support the argument that market orientation is based on innovation and correspond with statements by [39] and [18].

Secondly, the findings show that both customer orientation and competitor orientation have a positive impact on business influence. These findings correspond with earlier research by [32]. Nevertheless, the findings show that high-tech companies in the Czech Republic prefer customer orientation to competitor orientation. Likewise, the findings show that supplier orientation achieves the lowest value from all evaluated elements. The findings correspond with the findings of [54]. Supplier orientation was the lowest at companies working in power engineering companies.

Thirdly, we have to point out the interconnection of market orientation and strategic behaviour. Indeed, there are several new aspects with regards to perceiving market orientation and strategic behaviour. The perception of market orientation cannot be seen only as obtaining information, but also as the proper use of information inside the company, for the decision making-decision process and follow-up strategic behaviour as well. The findings confirm the hypothesis that gaining important information and its implementation into the decision-making process increases business performance. Furthermore, the findings can be compared to the research by [4], [12], [57] and [62] showing a positive correlation between market-oriented behaviours at high-tech companies and business performance. As a concluding remark, it should be noted that a relationship between market orientation and strategic behaviour is evident.

5.2 Limitation of the Research

The research is based on data from high-tech companies, which do business in quite a fast-changing and developing environment. In the case of repeated research using the same sample of companies, it is seen that there can be many changes caused by some different aspects, e.g. merger implications, management changes, changes in production or the end of whole or part production. The second type of limitation is that the survey involves only companies doing business in the Czech Republic. Another limitation stems from using a web-based questionnaire to obtain the data. Future research would benefit from obtaining data through more intensive face-to-face interviews.

5.3 Managerial Implications

Our findings can help to understand market orientation, its influence on business performance and new knowledge in this area. It is necessary to aim at all elements of market orientation, especially the interconnection between market orientation and strategic behaviour. Managers can compare the results of strategic decision-making and also ways of using information obtained in their companies with the average results of the high-tech companies doing business in the Czech Republic.

5.4 Suggestions for Further Research

Future research would benefit from insights gathered from research into high-tech companies;

especially the interconnection between market orientation and strategic behaviour e.g. detailed analysis of the decision-making process, analysis of speed in decision-making and the creation of a model of strategic behaviour.

Future research might also benefit from utilizing other sources such as suppliers, customers, distributors or industry experts in high-tech industry. We can get complex information about the industry not only via information from high-tech companies. It could analyze how market orientation at high-tech companies influence market orientation towards customers of high-tech companies. Future research could concentrate on research in high-tech companies from different countries to compare results. More detailed analysis should also focus on the items with the highest average rate (positive approach to innovations) and lowest average rate (response of high-tech companies to marketing developments of competitors). Another suggestion for future research can be in the description of Personality, Knowledge, Skills, and Experience by senior management to discover which is most important for the implementation of market orientation and strategic behaviour. However, this could be quite difficult and would require a wider research team. On the other hand, the results would be very helpful because it is important to know the strength and weaknesses of managers, attitudes and opinions. They influence the whole company through their management style; their choice of vision, aims and strategies; management of company culture; employee selection process, etc. The last possible avenue is to focus on the comparison of high-tech companies with companies in relatively traditional industries such as retailing and services. These companies probably work in different environments and it influences their different strategic orientations.

Conclusions

Generally, many high-tech companies use some principles of market orientation without theoretical knowledge of market orientation because their principles are derived from the nature of high-tech companies. This means mostly the effort to develop new technologies and use innovations, the impact on learning organization and customer orientation. In order to term a high-tech company as a market oriented one, it is also necessary to implement other principles such as: understanding market orientation; analyzing strengths and weaknesses of managers; increase and simplification of communication and cooperation inside the company; acquisition of important information from all stakeholders in the decision-making process.

The findings of this article show that high-tech companies prefer customer orientation to competitor orientation, though both customer orientation and competitor orientation contribute to business performance. The opposite is true for suppliers: High-tech companies are not interested in issues concerning suppliers. Research at high-tech companies confirms how important it is to gain information and to use this information inside the company for market orientation.

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Abstract

MARKET ORIENTATION AND STRATEGIC BEHAVIOUR AT HIGH-TECH COMPANIES

Lucie Kaňovská, Eva Tomášková

The paper is focused on market orientation with a special emphasis on strategic behaviour at high-tech companies in the Czech Republic. Market orientation is based on marketing conception and is described by many researchers as a method that helps to contribute to the better management of a company. The perception of the implementation of market orientation is evolving. However, the main principle is still the same – market orientation has a positive impact on business performance. Nowadays, a lot of authors deal with the implementation of market orientation. From this reason, we have undertaken research entitled: "Research on implementation on market orientation in Hi-Tech Firms" (GA 402/07/1493). The paper deals with market orientation and strategic behavior at hi-tech firms. The objective of the paper is to assess relationships between market orientation and strategic behaviour at high-tech companies. The data was acquired via a New Method questionnaire, which measured market orientation in a company. The New Method questionnaire, containing a 7-point Likert scale created by Tomaskova [54] was used for the research. The complete database was analyzed by using standard statistical methods (correlation analysis, Spearman correlation coefficient, chi-square) as well as other sophisticated techniques (Cronbach alpha). The main results of the research show that the level of market orientation at hi-tech firms in the Czech Republic is high and confirms the importance of obtaining information and using this information inside the company for market orientation. The main results of the research findings show that market orientation has a significant influence on strategic behaviour. It is possible to say that strategic behaviour is a part of market orientation. This strategic behaviour can be divided into two parts: Firstly gaining information for strategic company decision-making and, secondly, ways of using the information obtained in a company. Both these parts have a significant influence on business performance.

Key Words: *Market orientation, strategic behavior, hi-tech companies, the Czech Republic, management, business performance.*

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IDENTIFICATION AND PRIORITIZATION OF KEY STAKEHOLDER GROUPS IN MARKETING COMMUNICATION OF COLLEGES

Marie Slabá, Peter Štarchoň, Ivan Jáč

Introduction

A prerequisite for creation and implementation of communication strategy of any subject is a thorough market analysis. That is why this paper will also first briefly analyze the market of tertiary education in Slovakia and the Czech Republic. One of the main features of tertiary education is the growing competition on the side of offers and adverse tendencies on the side of demand caused by the demographic development. According to the prognosis of the Institute for Information in Education which came to be within the scope of the RELIK project (Reproduction of Human Capital) as well as demographic model of Czech Statistical Office, in 2050 there will be a decrease in the number of nineteen-year-olds (potential applicants for college studies) by more than 30 thousand compared to the current situation [7], [9]. There is a similar development according to analytical-prognostic study of the Institute of Information and Prognosis of Schools titled The development of indexes of Slovak tertiary educational system in years 1990–2005 and the prospect by the year 2020 expected in Slovakia [18]. For now this fact to a certain extent balances the "put-off, in the past unsatisfied demand for tertiary education among middle-aged high school graduates" [12, p. 43], which is also reflected in higher interest in combined or external and distant forms of studies, life-long education and university of the third age, as well as in the growing number of students in private colleges [12].

The second key aspect is a significant growth of competition due to the influence of private colleges as well as foreign institutions. Nowadays in the Czech Republic there are altogether 70 tertiary educational institutions. Out of that number 26 colleges have a status of public college, two of them are state universities and 44 are private colleges [14]. In Slovakia there are 20 public colleges, three state universities, 13 private colleges and four foreign colleges [11].

Another factor, which will influence the work of colleges and universities, is the change in the financing system. A drop in the provided financial resources is expected, ranging from 5 up to 20%, depending on evaluation of the quality of tertiary education. The mentioned financial resources will be allocated according to the so called performance criteria which will encompass assessment of research, qualification structures as well as international cooperation. This measure is a reaction to the falling demographic curve, but also it is supposed to support the diversification of colleges and universities, which follows from the Higher Education White Paper [12]. In Slovakia in 2014 the complex accreditation of colleges and universities will start, whose results will also influence the financing of tertiary educational institutions.

Naturally there are further aspects and reasons of the growing importance of marketing communication in the circumstances of colleges related to individual groups of stakeholders, e.g. in the context of social responsibility [10], related to organizational structure [3], or from the view point of enhancing quality of the offered services in the sphere of higher education [21] or in the context of the possibilities of internationalization of provided education [15]. All these aspects aim at the necessity of implementation of a new approach also in the marketing communication of colleges related to

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its higher effectiveness not only in the field of attracting quality applicants, but also in the field of effective obtaining of financial resources and other accessible funds as well as growing goodwill and image of the tertiary school. One of the modern trends, which effectively aim marketing communication at different groups of target markets (not only students), is the Stakeholder Circle Methodology.

1. Marketing Communication and Stakeholder Management

If we want to elaborate the question of effective marketing communication, the first step is the choice of target group, at which marketing communication will be focused. Nowadays stakeholder management is considered a very important element of managerial practice, theory and strategy [4], which was chosen by authors as a modern approach for the sphere of their own research of marketing communication. From the view point of the modern approach of stakeholder management, the choice of target groups is a part of the so called stakeholder analysis [17], which creates one of the basic elements of stakeholder management [5]. Analysis and mapping of stakeholders is an important part of stakeholder management in the sphere of nonprofit organizations [2], among which can also be considered different colleges and universities. This fact has been confirmed by a glossary entry topic of accessible literature as well as personal enquiries of experts in marketing communication of university institutions [16]. Analysis of college and university institutions' stakeholders have not yet been given proper attention, there is only a few research papers by foreign authors. This was another main ground for implementation of such a research, whose chosen outcomes are analyzed in this research paper.

1.2 Stakeholder Circle Methodology

Stakeholder Circle Methodology seems most effective for the sphere of marketing communication and establishment of pertinent target segments because its proceeding can effectively be applied to commercial as well as non-commercial organizations. The hypothesis, which postulates the applicability of implementing Stakeholder Circle Methodology in marketing communication is verified by contemporary authors who are dedicated to the sphere of stakeholder management, e.g. Chinyio says that „Stakeholder Circle Methodology offers a device for project team (management), which is applied to identification and setting priorities of key stakeholders of a project (company activities), this device is further applied to creating an appropriate strategy and communication plan aimed at target stakeholders to assure the understanding of all needs and expectations of key stakeholders. The result of each step of Stakeholder Circle Methodology brings forward information necessary for projecting effectively targeted communication“ [8, p. 103].

Stakeholder Circle Methodology itself consists of five basic steps: 1) identification of all relevant stakeholders, 2) prioritizing key stakeholders, 3) visualization of fey stakeholders, 4) creating a strategy of engaging stakeholders and effective communication, 5) monitoring effective communication with individual stakeholders [1], [20].

The primary goal of the first step of Stakeholder Circle Methodology lies in identification of all relevant stakeholder groups. The result of this step is a list of stakeholders which is a base for categorization of stakeholders and it tests the question – which stakeholders (individuals and/or groups) are influenced by the company activities or which stakeholders can influence the organization or its activities [1]. Second step of the Stakeholder Circle Methodology is setting own priorities among individual stakeholder groups. Stakeholder Circle Methodology makes it possible to assess the importance of stakeholders through four elementary factors – force of influence of a stakeholder, engagement of a stakeholder in the company activities, the share of a stakeholder and his/her activity. Then it is necessary to choose from all relevant identified groups of stakeholders from the first step those groups, which are key for the given organization. Based on these factors the so called Stakeholder index is counted. In the third step visualization is accomplished which is a graphic presentation of the stakeholder structure through multidimensional maps. The fourth step deals with projecting a concrete strategy of stakeholder engagement in scope of the given project or activity and a creation of a plan of targeted marketing communication, where attention is given to the most relevant (i.e. key) stakeholders who have been specified during setting priorities of stakeholders in step 2.

The stakeholder value and their expectations (information about what the project demands from stakeholders and what stakeholders expect from the project) are the most essential information for creating targeted communication strategy. Consideration of this information about the value and expectations of stakeholders together with information on the level of support given to project by stakeholders and the interest of stakeholders in the project is essential for a successful projection of communication strategy. The final step of Stakeholder Circle Methodology aims at monitoring and verification of all communication efforts and effectiveness of communication strategy and marketing communication plan [8].

2. Methodology of the Carried Out Research

It is vital for successful establishment of effective marketing communication to firstly identify the key stakeholder groups at which a college or university should aim its communication. The most relevant method for identification of these groups was chosen the above described Stakeholder Circle Methodology.

Initial identification of relevant stakeholder groups of colleges was done through a glossary entry topic of foreign specialized literature, research reports as well as scientific papers. The basic chosen stakeholder groups were further adapted to the circumstances of Czech and Slovak market of tertiary education. Among the basic groups of stakeholders were included especially contemporary and potential students and the families of students, graduates, individual departments in colleges, marketing and PR departments, competition, resort organizations (e.g. Accreditation Committee), the public and many more.

The chosen method of marketing research was a questionnaire. Questionnaires were distributed via Internet using electronic enquiry through the so called CAWI method (Computer Assisted Web Interviewing). To set the target group of respondents the technique of quota and intentional selection was used. For this problem the technique of intentional selection of the sample is more acceptable than statistical representative techniques. Altogether 41 colleges and universities in the Czech and Slovak Republics were enquired. The rate of return was 60.98%.

Two hypotheses were stated for the research. The first one follows from the premise that the priorities set for individual groups of stakeholders by respondents based on their professional judgment are different from priorities set based on the counted Stakeholder index. Second hypothesis follows from the assumption that the higher the Stakeholder index, the higher the priority of the given group of stakeholders (note: 1 is the highest priority, 15 the lowest priority).

Apart from own elaboration by the Stakeholder Circle Methodology, the received data were first processed with classical mathematical-statistical methods of data evaluation – especially through calculating the median, weighted average and multiplicity. To verify the second hypothesis regression analysis and calculation of coefficient of correlation was used (for calculation of coefficient of correlation for linear regression function see Formula 1 from [6, p. 206]).

$$r_{yx} = \frac{s_{xy}}{\sqrt{s_x{}^2 s_y{}^2}} \qquad (1)$$

The main research problems analyzed in detail in this paper are a) identification of key groups of stakeholders and b) setting priorities of key stakeholder groups.

Identification and prioritization of key stakeholder groups is carried out based on the first two steps of Stakeholder Circle Methodology. Setting priorities of key stakeholder groups is carried out on two levels, namely first based on own professional judgment of respondents and after that based on the calculated Stakeholder index in the second step of Stakeholder Circle Methodology.

Identification of stakeholders calls for the following information: 1) the direction of stakeholder's influence (division of stakeholders into external and internal groups and setting the direction of influence on marketing communication – upwards, outwards, sidewards, downwards), 2) the significance of a stakeholder for the project – how the stakeholder contributes into the project, whether he/she influences it, 3) the significance of stakeholder for the project – if the stakeholder disposes of power to influence other stakeholders, offers necessary resources for marketing communication, etc., 4) stakeholder's demands on the project.

To set priorities the following values are of key importance: the power of stakeholder's influence, stakeholder's engagement in the project, stakeholder's share and activity of stakeholder.

The power of stakeholder's influence and his/her engagement are evaluated on a scale from 1 to 4. The value of share and activity of a stakeholder then can have a value from 1 to 5. Each value has its own qualitative statement but basically in both cases the value 1 means the lowest value and 4 or 5 means the highest value.

Another value is Urgency, the value of which is calculated based on the stakeholder share and his/her activities within marketing communication using an Urgency matrix into which values of combinations of the stakeholder's share value in marketing communication and his/her activities are inserted (Formula 2). The resulting value of Urgency indicates the necessity of activities within marketing communication aimed at given stakeholder group. Thus Urgency values express how urgent the activities of marketing communication of colleges are with respect to individual stakeholder groups. Both inputs take their values from 1 to 5 that is why Urgency also has these values.

$$Urgency = INT(\sqrt{Stakeholder\ Value * Stakeholder\ Action/25} * 5) \qquad (2)$$

Caption:

INT	integer
Stakeholder Value	stakeholder's share
Stakeholder Action	stakeholder's activity

Source: Software Stakeholder Circle

Based on the value of stakeholder's influence power, stakeholder's engagement in a project, stakeholder's share, stakeholder's activity – thus the calculated value of Urgency, the Stakeholder Index is set, which is calculated according to formula – see Formula 3: Stakeholder index.

$$Stakeholder\ index = (\sum Power, Proximity, Urgency\ ) \qquad (3)$$

Caption:

Power	stakeholder's influence power
Proximity	stakeholder's engagement
Urgency	stakeholder's urgency for the project

Source: Software Stakeholder Circle

The above mentioned hypotheses which will be verified based on analyses and research results are also linked with the second research problem – setting priorities of key stakeholder groups.

3. Selected Outcomes of the Implemented Research

This paper analyzes in detail the first two steps of Stakeholder Circle Methodology – namely identification and prioritization of stakeholders. From the point of view of prioritization it is interesting to compare the subjective priorities which have been allocated based on professional judgment of the questioned and objective priorities which have been set according to Stakeholder index. The interdependence of these priorities will be examined through regression analysis.

3.1 Identification of Key Stakeholder Groups

The following key stakeholder groups were identified through the implemented research: graduates, Accreditation Committee, Ministry of Education, youth and Physical Education, or in Slovakia Ministry of Education, Science, Research and Sport of the Slovak Republic (further MŠ), grant organizations and other resource providers, individual departments, faculties and their employees, competition, marketing and PR departments, media, teachers and officers for studies in secondary technical schools (further SOŠ) and higher vocational schools (further VOŠ), potential students, parents of students, current students, SOŠ, VOŠ, public, local community and common interest associations and employers.

It is vital to specify the following parameters for a detailed identification of individual groups of stakeholders: significance and importance of a stakeholder for marketing communication of a college and stakeholder's requirements for marketing communication of a college. Based on the research among the most commonly stated requirements (80% of cases) is information. Own reputation is demanded by graduates of colleges, meeting the demands of customers is required by internal groups of respondents among which belong the individual departments, faculties, marketing and PR departments. Most stakeholder groups contribute to marketing communication or they influence it (identically

40% of stakeholder groups), possibly have the necessary knowledge for marketing communication of colleges.

Further for each stakeholder the so called direction of influence is set and every stakeholder is moved among internal groups of stakeholders or external stakeholder groups. These parameters were not monitored in the research, since they are attributes of methodology which can be clearly assigned to any stakeholder group. The direction of influence has four forms:

- upwards – managers or control groups, in the case of a college for example the management of a college or marketing managers and all workers in marketing and PR departments;
- outwards – these are stakeholder groups which are not included in the project, such as e.g. suppliers, state administration bodies and autonomies, public and local community, common interest associations, customers – namely students – potential, current and future;
- sidewards – this group comprises especially of competition – other colleges and universities;
- downwards – team members, employees and individual departments and faculties.

According to the implemented research it is clear that most key groups of stakeholders are external groups with the direction of influence outwards. This direction of influence includes stakeholders who are not directly engaged in marketing communication of a college, while these are especially Accreditation Committee, MŠ, grant organizations and other resource providers, graduates and their parents, as well as employers of graduates. Internal stakeholders with this direction of influence are current students.

3.2 Prioritization of Key Stakeholder Groups

As mentioned above, prioritization is carried out based on a calculation of the so called Stakeholder index (Formula 3). To calculate the Stakeholder index, it is necessary to determine the value of all four basic values, which are the power of influence, engagement, share and activity of a stakeholder. These values are listed collectively for all groups of stakeholders in Table 1.

Tab. 1: The value of influence power, engagement, share and activity of stakeholders

Stakeholder group	influence power	engagement	share	activity	urgency
Graduates	4	2	3	4	3
Accreditation Committee, MŠ	3	1	3	3	3
Grant organizations and other resource providers	2	1	2	2	2
Individual departments, faculties and their employees	4	4	5	5	5
Competition, other colleges	2	1	1	2	1
Marketing and public relations departments	2	4	5	5	4
Media	4	3	4	4	4
Teachers and officers for studies of SOŠ, VOŠ	2	2	3	3	3
Potential students	4	2	4	4	4
Parents of students	2	1	3	3	3
Current students	3	3	4	4	4
SOŠ, VOŠ	2	2	2	2	2
Public, local community, common interest associations	2	1	3	2	2
Employers	1	2	1	2	1

Source: own

From the stated results follows that in the case of colleges the groups of stakeholders with the greatest level of influence are graduates, individual departments, faculties and their employers, media and potential students. Employers have the lowest power of influence. From the point of view of stakeholder engagement, the groups which are directly involved in marketing communication of a college comprise of individual departments, faculties and their employees and marketing and PR departments. Groups which are not directly at all involved in marketing communication are the Accreditation Committee, MŠ, grant associations and other resource providers, competition, parents of students, public, local community and common interest associations. Minimal (to zero) share in marketing communication have competitors and employers. On the contrary especially marketing and PR departments and individual departments, faculties and their employees have a great share in the success as well as failure of marketing communication. According to the results of primary research the most active stakeholder groups are individual departments, faculties and their employees and – naturally – marketing and PR departments of tertiary educational institutions.

Groups of stakeholders included from the point of urgency or necessity to start marketing activities towards the given stakeholder group comprise of individual departments, faculties and their employees. From the point of view of urgency, this group received the highest value 5, which expresses the inevitability of immediate activity. Even though these stakeholder groups play an important role in marketing communication of tertiary educational institutions, they are only paid a small attention that is why they receive the greatest value of urgency. Other stakeholder groups which require the greatest urgency of activities comprise of marketing and PR departments, media, potential and current students. In the short term it is necessary to plan marketing activities for groups of stakeholders whose calculated value of urgency was 3. These are graduates, Accreditation Committee, MŠ, parents and teachers and officers for studies of SOŠ and VOŠ. There is only a small necessity of planning activities in marketing communication of the chosen colleges for groups identified as employers and competition (other colleges). In the medium term it is necessary to plan ordinary activities of marketing communication for grant organizations and other resource providers, SOŠ, VOŠ and the public, local community and common interest associations.

Calculated groups of Stakeholder index and allocated priorities based on Stakeholder Circle Methodology, as well as priorities stated based on professional judgment of the respondents are included in the following Table 2.

The highest value of the Stakeholder index was set for individual departments, faculties and their employees. The second group with the highest Stakeholder index is media which have the greatest ability to influence other stakeholder groups and are an important group of stakeholders to support a positive image and PR of a college and can also have an important impact on spreading positive WOM about a college. Another important stakeholder group which has the third highest Stakeholder index is the group of potential students who are closely followed by current students. Employers have the lowest value of Stakeholder index.

Based on results that are shown in Table 2: Stakeholder index and prioritization of stakeholder groups can be confirmed for the stated hypothesis which claims that priorities assigned by respondents for individual groups of stakeholders based on their professional judgment, differ from priorities which are assigned based on the calculated Stakeholder index. It is clear from the table that these priorities are different in almost all cases. Based on the Stakeholder index calculated from values of the power of influence of a stakeholder, engagement of a stakeholder which was set by respondents and the calculated value of urgency, priority 1 was given to individual departments, faculties and their employees. Even though these groups are very important, respondents themselves set for them priority 10. Marketing and PR departments, which also belong among internal stakeholder groups, were given priority 7 and based on Stakeholder Circle Methodology it was 5. On the contrary, respondents themselves clearly gave priority 1 to potential applicants, according to rules of Stakeholder Circle Methodology potential students were given priority 3. Current students were given priority 3 by respondents. Based on Stakeholder Circle Methodology they were given priority only by one level different, namely priority number 4. From the point of view of marketing

Tab. 2: Stakeholder index and prioritization of stakeholder groups

Group of stakeholders	Stakeholder index	Priority set according to Stakeholder Circle Methodology	Priority set by respondents
Individual departments, faculties and their employees	65.55	1	10
Media	55.66	2	5
Potential students	51.27	3	1
Current students	50.53	4	3
Marketing and public relations departments	49.79	5	7
Graduates	45.78	6	4
Accreditation Committee, MŠ	41.39	7	11
Teachers and officers for studies of SOŠ, VOŠ	35.52	8	6
Parents of students	31.13	9	2
SOŠ, VOŠ	30.03	10	8
Grant organizations and other resource providers	25.64	11	13
Public, Local community, common interest associations	25.64	12	12
Competition, other colleges	20.15	13	9
Employers	19.40	14	14

Source: own

communication of a college, current students are those who spread the goodwill of a college, that is why there should be „investments" made to support the spreading of positive WOM by this stakeholder group. Current students also have a significant power to influence other groups – especially potential applicants. It is also necessary to be aware of the fact that current students as well as graduates, who were given priority 6 by the Stakeholder Circle software (respondents even consider this group of stakeholders the fourth most significant group), can spread the goodwill and positive WOM, however they can also bear the negative WOM. The biggest deviation of the priority set by respondents and set by software was shown related to the groups of students' parents. Only two groups of stakeholders (public, local community, common interest associations and employers) were given the same value by respondents as well as according to the rules of Stakeholder Circle Methodology.

The interdependence of Stakeholder index and priority set according to Stakeholder Circle Methodology was verified using regression analysis and calculation of correlation coefficient (line linear regression model – Formula 4). In this case the best seems linear regression model $EY = \beta_0 + \beta_1 * x$, the estimate of the function is as follows:

$$\textit{Priority set according to MSC} = 18.932 - 0.292 * \textit{Stakeholder index} \qquad (4)$$

Explanations:
MSC Stakeholder Circle Methodology

Source: Software Stakeholder Circle

Based on this model the null hypothesis H0: $\beta_1 = 0$ was tested against hypothesis H1: $\beta_1 < 0$. Since the result P-value matching t-test was smaller than 0.001, it is confirmed that the slope of the line β_1 is negative, thus it was statistically verified that the higher the calculated Stakeholder index for individual stakeholder groups, the higher the priority (and lower value of datum) of these stakeholders. This assertion can also be supported by the amount and sign of the calculated correlation coefficient $r = -0.990$ (coefficient of determination $R^2 = 97.9$ %). Based on the carried out regression analysis the second hypothesis was verified that there is interdependence between Stakeholder index and the priority assigned according to Stakeholder Circle Methodology.

Conclusions

On the basis of the carried out research the following key groups of stakeholders were determined: graduates, Accreditation Committee, MŠ, grant organizations and other resource providers, individual departments, faculties and their employees, competition (other colleges), marketing and public relations departments, media, teachers and officers for studies in SOŠ, VOŠ, potential students, parents of students, current students, SOŠ, VOŠ, public, local community, common interest associations and employers. Among the five most important stakeholder target groups of marketing communication were included individual departments, faculties and their employees, media, potential and current students and marketing and public relations departments.

Based on Stakeholder index from the point of view of marketing communication needs priority one was assigned to individual departments, faculties and their employees. Own employees and individual departments or faculties directly and indirectly take part in creating marketing communication strategy of the whole tertiary educational institution. In spite of the fact that these groups are very important, respondents themselves assigned to them value 10, which means that these groups are not given enough attention within marketing communication of colleges. Priorities assigned to these groups evidently confirm their high importance for marketing communication of a college. Subjective perception of priority of these internal stakeholder groups is much lower than their priority given by Stakeholder Circle Methodology. This fact indicates that it is essential to support inner communication of colleges. Internal communication is a key part of modern holistic marketing, which includes apart from internal communication also other three key pillars – integrated marketing (or communication), which contributes to reaching synergy effect, socially responsible marketing and relational marketing, which aims not only at customers and key partners, but also all other stakeholders, including internal groups. If a college wants to be successful nowadays, it has to master all pillars of holistic marketing, including those linked to internal communication.

Second most important group from the point of view of marketing communication according to Stakeholder Circle Methodology was media. Respondents gave this stakeholder group priority five. From the point of view of marketing communication media are no doubt one of the key stakeholder groups of every organization since they have a great influence on all other stakeholder groups. Generally media are able to influence the public opinion. Since image and goodwill is very important for colleges and universities, they play an important role in their marketing communication. Naturally, key stakeholder groups comprise of potential as well as current students, whose needs are satisfied through main activities of tertiary educational institutions.

Both set hypothesis were verified based on carried out analyses. Thus we can state that priorities which are assigned based on professional judgment of respondents differ from priorities which were assigned to individual stakeholder groups based on the counted Stakeholder index. It can also be stated that the higher the value of Stakeholder index the higher the priority of the given stakeholder group for the needs of marketing communication.

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Abstract

IDENTIFICATION AND PRIORITIZATION OF KEY STAKEHOLDER GROUPS IN MARKETING COMMUNICATION OF COLLEGES

Marie Slabá, Peter Štarchoň, Ivan Jáč

This paper shows the possibility of using the Stakeholder Circle Methodology for the identification and prioritization of key stakeholder groups for the purpose of marketing communication in colleges. At the beginning, we emphasize the necessity of the use of marketing communications in the context of the changing market situation of tertiary education in the Czech and Slovak Republics, then we present basic steps of the Stakeholder Circle Methodology and methodology of the research. The selected research results are compared and subjective priorities are assigned based on professional judgment and, at the end, objective priorities are identified by Stakeholder index and subsequently key stakeholder groups are identified. Particular individual departments, faculty and staff, the media, potential and present students, and marketing and public relations departments belong among the most important target groups of stakeholders in marketing communication of universities. Based on the research results, the importance of internal communication has to be supported by universities' marketing communication, followed by media relations forward to increasing a positive image and goodwill.

Key Words: *Stakeholder, stakeholder circle methodology, stakeholder index, stakeholder identification, stakeholder prioritization.*

JEL Classification: *M31, M39.*

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BARRIERS OF MARKETING EFFECTIVENESS AND EFFICIENCY WITHIN COMPANIES: A QUALITATIVE STUDY

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Introduction

The marketing function is based primarily on fundamental strategic decisions like "Who is our ideal customer", "What is the value we propose", "How we ensure customers' satisfaction", "How we retain the competitive position" etc. [4]. Answering these questions correctly ensures that the company will stay market-oriented and thus will be able to adapt to the ever changing market conditions.

Market orientation can be defined as the company's ability to systematically generate relevant information about current and latent customer needs, spread this information across all company departments and use this information in decision making and subsequent behavior [3], [7]. Market orientation can be hence viewed as the degree to which the company includes information about the external environment into its strategic planning [1]. Last but not least, market orientation can be defined as the culture that places the highest priority on the profitable creation and maintenance of superior customer value and that provides norms of behavior regarding the organizational development of and responsiveness to market information [16].

Current research proves that market orientation correlates strongly with profitability (e.g. [10]). Strengthening market orientation of the company should therefore be the main focus of the marketing department. The Chief Marketing Officer (CMO) or his/her alternate should be, at the same time, the main coordinator of the marketing function.

However, over the last years, marketers within companies have faced serious criticism coming from the top management as well as from other business functions (such as finance, sales or production). Such criticism stems from the generally shared opinion that marketing expenditures tend to rise whereas marketing effectiveness and efficiency seem to decline over time, as proved by relatively low satisfaction and loyalty levels of customers and their resistance towards marketing activities [14]. By "effectiveness" we understand ability to achieve marketing goals, whereas by "efficiency" we understand the extent to which marketing costs are well used by achieving those goals.

1. Literature Review

In literature, various reasons for low effectiveness and efficiency of the marketing function can be found. They include insufficient control of CMOs over marketing strategy and marketing mix, lack of convenient measures for capturing effectiveness and efficiency of marketing investments, tactical and short-termed orientation of marketing departments, and last but not least low reputation of the marketing profession [6].

Insufficient control of CMOs over marketing strategy, and particularly over activities that influence customer acquisition and retention, lowers deeply the company's ability to create marketing assets such as brand value [14]. That such low control of CMOs over marketing mix exists even in multinational, seemingly market-oriented companies, was demonstrated for example by a recent survey of IBM [2], in which 1,700 marketers were interviewed covering 19 sectors and 64 countries. According to the research, the marketing department had a relatively strong influence over communication-related marketing activities such as advertising,

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external communications or social media. On the other hand, their influence over other components of the marketing mix (i.e. price, product and distribution) was limited. Only less than half of the respondents stated they had control over issues such as pricing, new product development or distribution strategy.

The effectiveness of the marketing function is not only affected by the level of the marketing department's control over marketing strategy. Clearly, even the best marketing strategy will not have the pursued effect, if not comprised in the company's strategic plans. The strategic influence of CMOs, however, seems to be limited too, as illustrated by a recent survey among 227 Czech marketing directors. The results showed that only 14% of the respondents considered marketing department as the most influential in constituting the overall company's strategy [4], while the most decision power appears to be afforded to the sales department (it was mentioned as the most powerful department by 55% of the respondents), followed by the financial department (mentioned by 22.5% of the respondents). However, differences were found over sectors. The influence of marketing department was conclusively the highest in the FMCG sector, since almost 40% of the CMOs working in this area stated that their department played the most powerful role in their company. Other sectors were far behind.

Another serious problem of marketing's effectiveness and efficiency is the inability of marketers to evaluate their activity appropriately. Marketing ROI is perceived as one of the biggest and most important challenges by marketers themselves, as shown for example by a study among US marketing directors, 83% of whom stated that demonstrating return on marketing spending is their top priority. Moreover, more than half of them consider current metrics for measuring marketing ROI insufficient [17]. Similarly, in the study of IBM [2] introduced above, only 44% of the respondents believed that they were sufficiently prepared to provide "hard numbers" that would relate marketing spending to financial results of the company.

The felt inability to link the marketing spending to financial results, however, may not be due to the inexistence of adequate metrics. Many companies still measure marketing effectiveness on the basis of profit, sales or market share. Unfortunately, from marketing point of view this is not the most suitable approach, because relationship of these indicators to marketing effectiveness is usually not direct and because a number of key marketing activities do not have an immediate effect on the overall results of the company [21]. Moreover, these indicators support short-termed orientation of companies, whereas building customer relationships and brands requires longer perspective. However, although relatively new measures exist that allow for quantifying the long-term effect of marketing spending (e.g. Customer Lifetime Value), they are still used only exceptionally [11]. The key reason for inappropriate (or the lack of) usage of available metrics may be the lack of analytical, financial and IT skills of marketing managers [21], [22]. Consequently, under these circumstances, marketing expenditures are perceived as "soft money" which can easily be cut, rather than as investments [13], [12].

The generally adopted approach to quantifying marketing expenditure and company's financial standing prioritizes short-term orientation. Short-term orientation of marketing departments is further strengthened by high fluctuation rate of marketing managers. Managers responsible for marketing strategies and their implementation change positions at very short intervals (often shorter than two years). This means that before marketing strategy is implemented and evaluated, responsible manager leaves [9]. The vision of rapid promotion governed by positive short-term results naturally stimulates short-term behavior of marketing managers, who then lean towards sales mentality [22], ignoring long-term impact on customers. Marketing managers can thus support programs which generate immediate profits (e.g. discount promotions, unfair and annoying marketing practices, risky brand extensions etc.), but which at the same time reduce the level of customer satisfaction and loyalty. This strategy, however, is not market oriented and does not bring long-term effects. In fact, according to a recent Teradata study [20] among 1,100 marketers from 19 European countries, short-term orientation of marketing departments was considered the biggest barrier of marketing effectiveness.

All of the barriers mentioned may have negative effect on the credibility of marketers in the eyes of their colleagues and top management. As shown in a study that measured how are US marketers perceived by their colleagues from other business functions, only 38% of the respondents evaluated their marketing colleagues as good or excellent, only 18% perceived them as result oriented and only 34% believed that marketers in their company were strategic thinkers [15]. Low credibility of the marketing profession can be guessed also from the compensation of marketers in relation to other business professions. In the US, average salary of a marketing manager represents 69% of finance manager's salary and 91% of production manager's salary [19]. It also seems that being a marketing manager is not the best precondition for the CEO position. Among the hundred most important British companies, for instance, there are twice as many CEOs with financial background than with marketing background [19].

The above described barriers of marketing effectiveness and efficiency correspond well with determinants of market orientation as described by Jaworski and Kohli [3]. These researchers proved that market orientation correlates with short-term versus long-term orientation of the company's compensation system (long-term orientation correlates with market orientation positively), relationships among individual company's departments (both formal and informal interconnection among departments correlates with market orientation positively) and last but not least the approach of top management towards market orientation (continuous support of top management towards market orientation and low aversion towards risk correlate with market orientation positively). As market orientation has proved to be one of the key determinants of profitability [10], it seems to be most desirable to overcome the barriers of marketing effectiveness and efficiency. However, the general barriers described above can manifest locally in heterogeneous ways depending on the local context. Also, the barriers described in (mostly international) literature may or may not correspond to barriers perceived by local marketers. To give specific recommendations in a specific context, it is thus necessary to complement our understanding of the issue.

2. Goal of the Study and Methodology

The goal of this study is identification of the main barriers of marketing effectiveness and efficiency which are perceived by Czech marketing managers. These findings should be of high importance for both CEOs (resp. owners) and marketers, because increasing effectiveness and efficiency of the marketing function is their common goal. However, we also want to extend the current literature, as it is highly fragmented and US focused and individuate barriers that may be context-specific.

Our study is based on two focus groups realized in cooperation with the research agency Millward Brown. The first focus group was realized with 5 marketing managers, the second with 7 marketing managers. All of the respondents were senior marketing managers. They worked in marketing departments of various sizes (in 4 cases they worked in large marketing departments of tens of employees, in 3 cases they worked in departments of less than 10 people, and in 5 cases they were the only marketing professional in the company) and various levels of internationalization (in 3 cases they worked for local companies, and in 9 cases for subsidiaries of multinational corporations). Respondents worked for companies operating in different sectors: 4 in FMCG, 5 in B2B, 1 in services, 1 in retail and 1 in durables. However, during their career, most of them gained experience from more than one sector. Each of the respondents was motivated to participate by a small incentive (1,000 CZK).

Each of the sessions lasted approximately 90 minutes. The moderator focused on three main fields. He asked first how respondents perceived themselves as marketers, second how they believed their colleagues and superiors perceived them, and third what were the main barriers for effectiveness and efficiency of their activities. For the first and the second questions field projective techniques were used, as they are facilitate the expression of deep and difficultly communicable thoughts through metaphors.

Both focus groups were recorded on DVD and subsequently transcribed verbatim. In order to translate the respondents' emic experiences into etic categories, the data was then analyzed through the operations of categorization, abstraction, comparison and iteration [18].

3. Findings

The focus groups revealed several key themes that reflect how local marketers perceive their jobs. Their account exemplifies the locally lived experience of the barriers to marketing's effectiveness and efficiency as described in literature, but also identifies other barriers not mentioned in other studies.

In the following, we will first illustrate what marketers see as the main content of their jobs including the perceived strategic/operational nature of their work and their perceived influence over the company's overall strategy and marketing mix. We will then turn to marketers' image in the rest of the company and finally to the instruments used for measuring marketing's effectiveness and efficiency within the company. In this way, it will be possible to assess the existence and importance of these barriers at the local level. The last part of findings will then engage with the barriers specific to the local context.

3.1 Marketing: A Job with Vastly Different Content

Based on the respondents' accounts, it is clear that marketing differs greatly over various types of companies and over various sectors. Thus, while some respondents described their job as very comprehensive starting from marketing research, over strategic marketing (brand management, CRM, product innovation etc.), to more or less operational marketing (product portfolio management, pricing, marketing communications etc.), others gave a picture of their work as founded practically only in marketing communications (e.g. events and trade shows organization, media relations, advertising, website management, brochures and newsletter creation etc.). In the second case, marketing was understood as a supporting function for the sales department and its main goal was attracting new customers (see e.g. [8]). As most respondents experienced marketing practice in different types of companies and different sectors, they can also give a more comprehensive account of its different manifestations.

> I've experienced various scenarios in which marketing executed communications only, or the other side of the spectrum, in which marketing department developed new products, managed pricing, price lists, margins, dealt with ordering of goods – it was quite wide. (retail)

> I worked in FMCG for 10 years and there marketing is really ATL, BTL, research and that's it. [...] Here [financial sector] it's different, because we are expected to manage the company in terms of product innovation, call center, digital media and we sell online as well. (financial)

The content of the marketing function seems to depend partly on the customers it serves (B2B, B2C), the sector it operates in (FMCG, banking, retail, special goods etc.), but also on the type and size of company (multinational corporations, locally owned companies). Marketing in B2B companies appears to be more sales-supportive or even sales-identical than on B2C markets. What seems to have a major influence for the orientation of the marketing department, however, is the size and geography of the ownership. Marketing seems to be attributed less importance in locally owned and smaller companies.

> Although our turnover is quite good for being a Czech firm, I'm the only person that does marketing for the whole world. […] I mostly move in the dark waters, where I try to work with a small budget. (durables)

Furthermore, due to the perceived high cost of market data, marketers at smaller companies in particular tend to suffer the lack of market information. Often, they do not undertake any marketing research and therefore have no idea about customer preferences, brand awareness etc.

> When I only mention "research" of anything, everybody grabs rash and it is finished [...] I wish I could realize some research. (durables)

Larger companies have enough market data at their disposition. However, marketers from larger companies spend a lot of energy on administration (emailing, writing statuses and reports, long day meetings etc.), on processing of the enormous amount of data and on negotiation with other departments or the headquarters.

> Understanding the consumer should be the main content of the [marketer's] job, although it sometimes gets wild [...] statuses, e-mails and also the different tables [...] all day long meetings, always saying something and solve "Are you going?", "You will not go?", "Well, I have to be there, at least just sitting". And

I think it is a big waste of time. These are the sort of strange bonds, you do not have to be there, but everybody expects it. (FMCG)

I feel like I keep targeting someone [consumers, headquarters, colleagues], I keep picking the right information from the huge database that exists for each product (FMCG)

The time of recession seems to further alter the content of marketing, in most cases to the worse. Several respondents mentioned cuts in marketing spending and the subsequent further narrowing of the marketing's field of influence, as one of the main solutions companies adopt when facing recession.

Since 2008 when the recession started […] there were three areas that were hit by huge cuts: investment, human resources and marketing. […] So the role of marketing right now is this broken person. […] Now we don't make analyses, we don't collaborate with research agencies, because of course it is not for free and the cost is significant and obviously strategic decisions suffer by that, too, and we don't exactly have many new products (FMCG).

The content of the marketing job conditions the degree of control over the overall strategy. Clearly, in cases where the marketing function is rather independent and given enough responsibility, it also defines questions regarding the whole marketing mix. Such department then engages in product innovation and development, defines pricing strategy, etc. which allows to pursue market orientation.

We are responsible for all activities of the company, we are supposed to drive things, we are pressed to have the thumb over most of the important steps [...] marketing creates the strategies. (FMCG)

Where marketing is limited to a very narrowly defined communication, the strategic decisions are also beyond their sphere of influence.

We deal primarily with communications, above the line, bellow the line. We do not talk into product range, prices. (retail)

With us marketing is from research, through promotional items, inventing competitions, to posters development. (B2B)

The content of the marketing function, its effectiveness and efficiency, and the connected issue of marketing's influence over the overall strategy of the company (i.e. the level of overall market orientation) depends also on the person of CEO (or owner) and his/her professional background. CEOs with marketing background tend to understand the importance of long-term market orientation and the role of marketing. Thus, they delegate wider competencies to marketers, support their efforts and allow for a bigger influence of marketing in the overall strategy.

My best experience was in a company with CEO who was a marketer. He gave marketing great competences – marketing was managing pricing, margin, defined product range, innovations on the market etc. However, this was connected with responsibility – what will be the revenue and profit in each category – it was up to us how we will coordinate our colleagues in sales and other departments. It worked very well. But not everyone is so enlightened. (retail)

On the other hand, CEOs with sales, production or financial background may be a significant barrier for an efficient marketing function.

If there is no support from the owner, or the CEO and top management, it becomes a problem. (FMCG)

Our CEO is a former marketer and you can tell. Our former CEO was from sales and it is clear that this one is more helpful. (FMCG)

Our top management comes from production, thus production is the priority, and then sales support. (FMCG)

We have a director who used to be sales director [...] Marketing is a support, which does not have any say in planning. (B2B)

In cases where the top management is not inclined to include marketing in more strategic decisions, marketers have to, according to respondents, work hard on building trust with the top management and negotiate.

The negotiation with top management has its particularities depending on the type of the company: local or multinational. While in the locally owned businesses, there is often a lack of understanding of marketing itself and thus a certain mistrust towards operations that tend to be costly, multinational companies often do recognize the importance of marketing, but are managed centrally. Local subsidiaries are then often controlled by the multinational headquarters, where strategic marketing decisions are taken and communication campaigns prepared. Local marketing department is then responsible only for localization of those campaigns and reporting, and have a very small space in which to effectuate efficient marketing, as described in literature [5]. In their case, continuous negotiation with the headquarters makes up a significant part of their job.

> It's a lot of negotiation with the headquarters, what they authorize and what not. (FMCG)

> We were reporting all day long, we did not do anything else. (FMCG)

Marketers from subsidiaries with strict control seem to perceive the role of headquarters negatively. They believe that authoritarian control from the headquarters caused ineffectiveness and need of evasive maneuvers.

> Sometimes the orders from headquarters were directly against the interests of our local business. (B2B)

> Certainly it would help us if they gave us more space, more trust and opportunity to fulfill our strategies, which we defined here and if they gave a little more money. (retail)

> We try to go in the direction declared [by the headquarters], but sometimes we look for our own unexplored terrain and do things a little bit differently or even guerrilla-like, I admit. These are fortunately fields that are almost completely under our control, such as PR or Facebook. (retail)

On the other hand, some marketers from subsidiaries stated that headquarters give them adequate freedom. These marketers seemed not to perceive the role of headquarters negatively.

> They do not want us to do as many numbers and analysis [...] and as we have many specifics in comparison to the mother company, it's nice to do marketing here. Although we have many things give [by the headquarters], but it is only a recommendation and it's not what we have and do or have to prove afterwards. (B2B)

3.2 Magicians or Trouble-Makers? Marketers' Image within the Company

The content of the marketing function, its strategic influence and the understanding of top management are not the only issues that preclude marketing's effectiveness and efficiency. Another barrier is represented by the marketers' image and support within the company. This issue described in literature was documented by our respondents who felt that their colleagues do not comprehend what is the essence and contribution of marketers' job and perceived this lack of comprehension as a significant barrier for their job. Moreover, according to our respondents, they were often perceived as a department that only consumes financial resources earned by other departments.

> I feel that our people still do not know what to imagine under "marketing". When you say "doctor" or "dentist", you automatically associate it with something. I believe that if I asked what I was doing they would name some partial things, but they would definitely not describe the fundaments. (B2B)

> Everybody makes money in the other departments, but it's just me in marketing to spend it [...] Marketing is thus generally perceived as a department which gives out money, and it is basically true, because I consume money visibly. (FMCG)

The image of marketers within companies seemed to be often stereotypical and often based on images originated in popular culture. Respondents believed that they were often perceived as people who focused primarily on "image" or entertainment, not on substance. Also, they are seen as those who understand things only superficially and who are slightly out of reality.

> We were perceived as girls who have fun all the time, inventing nonsense, spending money that others earn, who make it difficult to work when having an all day meeting, because it's just laughter, guffaws and screaming… (FMCG)

> A lot of my friends think that I'm living like the Mel Gibson movie "What Women Want." (financial)

> They perceive us as people with ties who sometimes take this or that to pieces, do not understand things properly, but have gelled hair. (financial)

The misunderstanding of marketers' job also causes other colleagues to blame the marketing department when something goes wrong, even though the marketing does not possess appropriate competences. Respondents even mentioned that other departments tended to be averse towards activities they proposed.

> If things go wrong, it is because of marketing, but it's never because they [the sales] would not succeed. (B2B)

> When something goes wrong, it is marketing's fault. (retail)

Despite of these misperceptions, respondents agreed that their success was strongly dependent on others and that cooperation with their colleagues from other company's departments was one of the cornerstones of their job. Thus, the lack of understanding creates a serious barrier for effective work also because it is one of the reasons for a constant negotiation with other departments, which represents a source of demotivation and low effectiveness.

> I have to target [persuade] somebody all the time... the sales reps to sell my product well and ensure its good exposure... I have to defend my stuff in front the parent headquarters. (FMCG)

> After some time, you lose motivation to constantly argue with someone. There are things you found out you cannot change and it is quite annoying to come back the next year and see that you still cannot move them [...] Emotionally you feel that a lot of things should be different, but you do not devote your energy to support them [the changes] with arguments... (financial)

A solution to this problem may reside in "internal marketing". As confirmed by the respondents, although it represents a potential source of frustration, strong "internal marketing" offers a way to ensure that marketing is perceived as an investment rather than a mere expenditure and should thus be of highest priority. Consequently, respondents working in companies that allow for such endeavor, try to engage their colleagues from other departments in informational sessions and/or marketing operations to educate them about marketing department's processes and their motivations.

> Each quarterly period, when new products were launched, we invited accountants and all other colleagues not involved in marketing to participate in a session where we seemingly wanted to present the new products and distribute samples. Within this session each of us was to somehow present how much the company earned by our decisions or marketing activities [...] It took about one year [...] before people stopped going there just for the samples... (FMCG)

Interestingly, the current recession that on the one hand caused cuts in spending and further movement towards short-term orientation, also opened up opportunities especially in internal marketing. This is documented by the respondents' accounts of how the low sales justified the involvement of other departments in marketing operations or how marketing serves as a tool to liven up other employees in times of bad news.

> We went to all the people [in the company] and told them: "When you go to the drugstore or a supermarket to shop, look what's wrong with our brand, look for missing products or competition in our stands. This work will not cost you much time and it is extremely important to us". This worked pretty well. (FMCG)

Our colleagues […] often hear how terribly bad the whole sector of construction is doing, so that's why sometimes it's good to show them our numbers. […] To show them what they hear everyday in the media in a little brighter colors. (B2B)

However, since it requires a lot of effort, respondents also found internal marketing as exhausting and thus often not sustainable in the long term.

I think that we are not very good in the internal work [...] or that we have lost appetite to do it [...] We can say that the boss is just thickheaded because he does not get this. But it is more my fault, because I cannot somehow sell it to him. It's about marketing and we ourselves are not able to do it. It is easy to put something on TV, because I like it, but to sell an idea inside [of a company] is really difficult. (financial)

The difficulties that marketers encounter within the company and the efforts they have to exert to overcome them (not always successfully) are some of the main reasons for high fluctuation rate of marketing managers that, according to our respondents, further undermines effectiveness and efficiency of marketing, because each new marketing director tends to bring a radically new brand strategy. Long-term marketing strategy is thus impossible.

As with the content of marketing, however, even in the field of cooperation with other departments there are differences among companies, especially across their different sizes.

Unsurprisingly, small companies with an owner or just a few employees seem not to have very serious problems with communication and coordination of the marketing function. In this case it is the owner (or CEO) who has the final decision power regarding all marketing questions. The communication among the business functions is also relatively simple.

Because we have just two salespeople and one marketer for the whole world, we always find an agreement. (durables)

We have a marketing department with two people, sales department with just a few people and one technician only, so in comparison to large departments the communication runs simpler. (B2B)

Smaller companies, as I know them, do not have divisions, there is the owner who is in charge of absolutely everything, managing sales, price or marketing creative strategies. This is what is strictly divided in large firms. (B2B)

Larger companies, on the other hand, seem to have significant problems with coordination of the marketing function and the consistency of marketing decisions.

3.3 Problems with Proving Return on Marketing Investments

Another serious barrier to marketing's effectiveness and efficiency individuated in the literature is the inability to prove return of marketing activities. This problem was confirmed by our respondents who perceived it as one of the reasons behind low credibility of marketers within companies. They highlighted, however, that many activities in marketing were difficult to measure (for example because the effects of marketing tools often overlap) and many marketing activities therefore stay unmeasured. Marketers are then left with intuition and trial/error method or common sense. In this regard they proposed that some level of intuition is necessary in marketing, as well as some rate of failure.

We have a few projects on which it is easy to see what marketing brings, but it is really just a few. (B2B)

If I could measure everything [...] it would help us enormously [...] but it is not always possible [...] I personally, even though I know that it is necessary to measure, evaluate and so on, I fight this in practice and try to do some things more intuitively. And then it turns out to be trial and error method, I admit. (B2B)

[To measure the effect of mass-media campaign] it is more trial/error method. We use a campaign, then try something else and compare the sales." (retail)

One cannot rely only on the data and without data it is not possible. Ideally, both should be linked. (FMCG)

However, over the last years, the measurement capabilities in marketing had improved significantly. The respondents saw this especially as a contribution of digital marketing and loyalty programs which bring an overwhelming amount of customer data. Especially activities in the online environment can be easily evaluated, which motivates marketers to use digital marketing tools (e.g. SMS campaigns) rather than less measurable tools (e.g. radio or print advertisement). Respondents believed that moving from mass media to more targeted one-to-one media was an important trend. They found this transition easy to defend in front of both CEO and CFO, because it brings better measurability and higher efficiency.

> Fortunately, the number of instruments that allow to measure and evaluate is growing. We control the whole sales process, we have our shops, our cashier system, information system, loyalty program and it is all very well connected. We think of a promotion, something like 20% off, there are coupons for this, so online we can see immediately what impact does it have. (retail)

However, an exaggerated switching to measurable processes in general and digital marketing in particular has its pitfalls, as documented by a respondent who noted that this transition might be sometimes artificial, responding to the need of measurability whereas actual effectiveness may be neglected.

> To activities, that we are able to evaluate, we attribute greater credibility than those that are evaluated with a bit more difficulty. I think the sobering up in the world was relatively quick. In Britain, all rushed to the internet. "Well, we measure clicks, conversions, we have a webpage, we have fans on facebook." And they fell back from the traditional media and all of a sudden their brand started to erode and they found out that even though they optimized the banner no matter how [...] nobody clicked on it, because they did not have any reason. The brand was not sexy. (B2B)

Within the field of traditional measures, the most important criterion for evaluating the effectiveness of marketers' work tends to be profitability, turnover, or market share. Respondents were aware that these criteria lead them to short-term orientation. However, they did not see many possibilities for a change as short-term pressures tend to be caused by top management.

> They [the management] have a really short-term perspective... We do not talk about brand perception, where we want to aim... It is difficult. Unfortunately, short-term goals prevail. (retail)

The top management pressure was strengthened by the current economic recession that, as with the general role of marketing, also altered the way measures are used. Because there has been a growing pressure to cut spending, clearly what is sought is the justification for costs. As a result, pressures from the top management towards marketing accountability had been rising. Any improvement in justifying effects of marketing expenditures and investments is thus believed to be really helpful, especially in case the CEO was not very marketing literate. Respondents therefore agreed that they tried to measure effectiveness of as many activities as possible.

> The pressure from up to do measurable things is growing. Because when there are cuts, the question is where and if you have arguments that you cannot cut this or that because it works and you have numbers, it is a strong argument. [...] pressure on the measurability of everything possible is certainly a step in the right direction. (retail)

However, there seems to be the effect both of the market the company operates on (B2C/B2B) and of the company's ownership (privately owned/stock company). In case of B2B companies, there is more pressure on retaining customers. Marketers from B2B companies thus use longer-term criteria for evaluating effectiveness of their marketing activities, especially customer satisfaction and customer loyalty.

Privately owned companies, as opposed to stock companies, tend to have other primary goals than short-term profit. Also, if the company has a private ownership, the business culture of the ownership becomes more crucial (e.g. Japanese culture). When it is a stock company, there is more pressure on short-term profit. This is more often true for big multinational corporations operating in FMCG sector.

> We measure the loyalty of the customers [...] and how many new customers we have, that is all for us. (B2B)

> For us it's definitely loyalty. It is watched a lot and each lost customer is talked about and analyzed and it's a big problem, we just did something wrong." (B2B, privately owned)

> [...] the CEO is evaluated based on the results. It is complicated. I understand that if a Japanese company has been around for 400 years, they have a certain idea, but if you have shareholders it's another story. Somebody from Germany comes and says: "I'm here just to collect money for my shareholders. I'm not interested in anything else" (financial)

Long-term measurements offered by marketing literature such as Customer Lifetime Value or profitability of individual customers do not seem to be in use and were not even mentioned. Longer term marketing visions stay therefore very often just on paper.

The short-term and more tactical orientation of some companies may thus be caused by the perceived lack (factual lack of knowledge of) and inaccuracy of long-term measuring methods.

> [to measure sales] is possible only for the tactical campaigns that you do on weekly basis. Then there are marketing goals that are very far away and you have to head there for a long time, because otherwise the brand will not live." (B2B)

3.4 Locally Manifested Barriers

Except for the barriers described in literature, our respondents individuated other issues that prevent the marketing function in their companies from being effective and efficient. First of all, what was found in locally owned companies was the unwillingness to alter the known processes, to alter the "way things are done". As one of the respondents notes:

> It is a closed group of people [in the business sector] who are not even interested in letting other ideas and other people in and altering their way of thinking. (FMCG)

In this case, even the internal marketing activities may not be sufficient to alter the top management's view of marketing. Marketing is thus limited to the top management's perception of what it is.

Second barrier that appeared in the data were some aspects of the Czech national and business culture, such as the unwillingness to share best practices and failures across companies or the general lack of competencies in the field. This precludes the whole field from learning and moving forward.

> There was a person [at a conference] who was talking about how their company was great. So I didn't learn anything that I wouldn't know already. I don't know if it's typically Czech, because they show really nice case studies abroad. Although it is difficult to bring it here from the US, but nobody does it here. Everybody guards his/her limited knowledge. (financial)

Also, since marketers do not learn about other marketers' failures, it may lead to the frustration from being the only one.

Conclusions

The goal of the paper was to explore the local manifestation of the barriers to marketing's effectiveness and efficiency. Such barriers, as described in literature, include the tactical short-term orientation of marketing operations, the lack of marketing's influence on general strategy, the lack of measures to link the marketing operations and its financial effects and the image of the marketing department within the company. These barriers often coincide with the barriers to market orientation of the company, which represents one of the key elements for its profitability [3], [10].

Our data showed that the above mentioned barriers to marketing's effectiveness and efficiency do exist in the local Czech setting and are encountered on everyday basis by the interviewed marketers, but that there also seem to be barriers not found in other literature (the unwillingness to alter the perceived content of marketing and the unwillingness of marketers to share their experience).

What was found as most crucial is the narrow focus of the marketing department, which causes its short-term orientation. This is strengthened by the lack of use of measures that would calculate the long-term effect of marketing operations and the pressure on short-term profit from the top management. The marketers' work is then complicated by the misconception of marketing's function by its colleagues and by the CEO, who is crucial in defining the marketing's competencies, budget and strategic involvement. These barriers are then strengthened by the current economic recession, which increases pressures on accountability of all costs, and thus strengthens the short-term orientation (due to the better accountability of short-term operations).

Our data, however, also showed that there are big differences across different sectors, company sizes and ownership types. To summarize and synthesize our findings, we constructed a tentative model, in which we estimate four basic types of companies differing with respect to the role marketing plays within them. These are "B2C Marketing Oriented", "B2C Sales Oriented", "B2B Marketing Oriented" and "B2B Sales Oriented" (see fig. 1).

In case of "B2C Marketing Oriented" companies, marketing department plays rather strategic role. It ensures synergy among company's departments. Marketing department is typically large and does not seem to face problems with defending its budget. Effectiveness of the marketing function is high. The company should therefore focus primarily on efficiency of marketing activities.

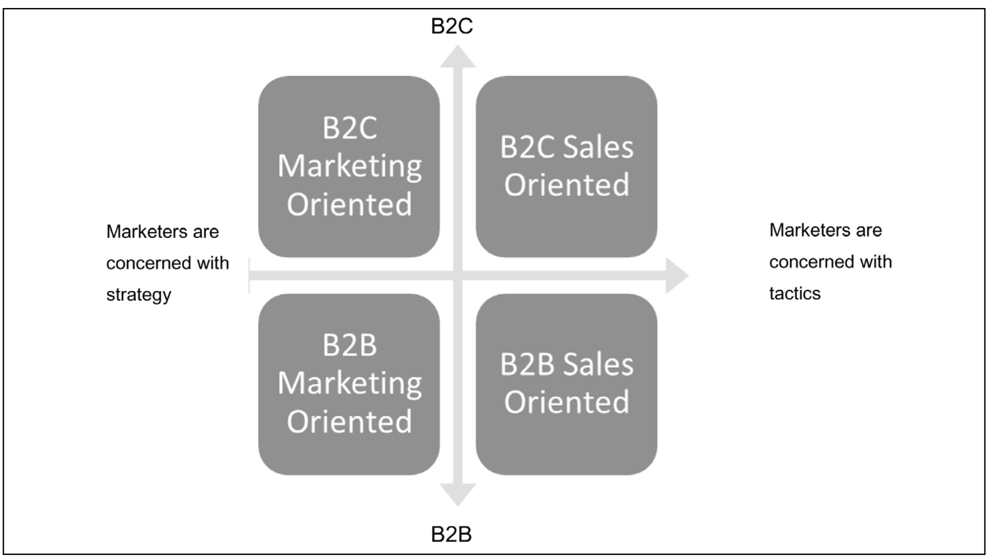
Marketing in "B2C Sales Oriented" companies is still a relatively strong department. However, it is focused primarily on marketing communications. It is the sales department which controls the company. Effectiveness of the marketing function should be increased distinctly.

In "B2B Marketing Oriented" companies marketing and sales are strongly interconnected. The company acquires and retains customers by personal contacts, marketing communications plays negligible role. The company should focus primarily on efficiency of marketing activities.

In "B2B Sales Oriented" companies marketing plays insignificant role, focused primarily on sales support. It is perceived as a less important department and its budget is cut easily. In this case effectiveness of the marketing function should be increased distinctly.

What seems to play an important role in increasing marketing's reputation and securing the support of other colleagues is internal marketing.

Fig. 1: Company typology with respect to the role of marketing



Source: authors

Apart from the barriers described in international marketing literature, however, our data also reveals barriers found in our specific context and not mentioned by other studies. In particular, what was found was the closeness and unwillingness to share.

Managerial Recommendations

In general, for increasing marketing effectiveness and efficiency the role of the CEO seems to be critical. The CEO should first of all appoint the position of CMO. He or she should concentrate on hiring such a person for this position who would possess strategic, financial and analytical skills and knowledge as well as ambition to do marketing in its broadest sense. Secondly, the CEO should support strongly and continuously the CMO's efforts within the company. The CMO should not be responsible just for marketing communications but for both strategic and operational marketing decisions.

Further, the CEO, the CMO and the CFO should agree on the usage of both short-term and long-term criteria for measuring marketing ROI. Both criteria should become part of the company's overall business criteria and should become basis for the CMO's compensation. The CEO should control performance of the CMO according to the criteria agreed. However, he or she should respect that marketing is connected with some degree of failure. Evaluation of the CMO's performance requires therefore a certain level of understanding.

The CMO should be continuously explaining benefits of marketing activities to other departments of the company. Setting up regular formal or informal meetings, for instance, seems to be an effective strategy in this regard, as does inventing creative ways to engage colleagues from other departments in marketing's activities. At the same time he or she should continuously search for new measures of the success of marketing activities. At least in larger companies CMOs should consider investment into such IT systems which would increase measurability of marketing effectiveness and efficiency as well as the credibility of his or her department.

Research Limitations and Areas for Future Research

This study is based on qualitative data originated from focus groups with marketing professionals. As such, it is not its goal to present statistically representative conclusions, but rather offer an insight into the current situation and individuate the heterogeneous problems marketers face in their everyday work that prevent them from being effective and efficient. In this way, the resulting typology of the different companies is also tentative and should be validated by a subsequent research.

Further research should investigate the quantitative side of the barriers to marketing's effectiveness and efficiency. In particular, it should address the quantitative distribution of the individuated barriers within different types of companies. Also, further research is needed to investigate these barriers in other contexts. In particular, it should address the barriers uncovered only in our particular context to determine, if they are context-specific or could be found in other settings as well.

Moreover, CEOs and colleagues from other departments should also be involved in the further research to get a more objective view which would give the possibility to confirm the findings.

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Abstract

BARRIERS OF MARKETING EFFECTIVENESS AND EFFICIENCY WITHIN COMPANIES: A QUALITATIVE STUDY

Miroslav Karlíček, Zuzana Chytková, Ladislav Tyll, Hana Mohelská

Market orientation can be defined as the company's ability to systematically generate relevant information about current and latent customer needs, spread this information across all company departments and use this information in decision making and subsequent behavior. Current research proves that market orientation correlates strongly with profitability. Strengthening market orientation should therefore be the main focus of the marketing department. However, over the last years, marketers within companies have faced serious criticism coming from the top management as well as from other business functions. This criticism stems from the generally shared opinion that marketing expenditures tend to rise whereas marketing effectiveness and efficiency seem to decline over time, as proved by relatively low satisfaction and loyalty levels of customers and their resistance towards marketing activities. This study investigates the main barriers of marketing effectiveness and efficiency within companies. Based on two focus groups with senior Czech marketing managers we revealed several key themes that reflect how local marketers perceive their jobs. We identified that marketing departments differ diametrically in activities they execute, that marketers face image problem within their companies and that they are not able to prove return of their activities sufficiently. Furthermore, we individuated barriers specific for our context not found in the literature. However, companies of different size and sectors have specifics which are discussed in the text. Managerial recommendations are added. All of these findings should be of high importance for both CEOs (resp. owners) and marketers, because increasing effectiveness and efficiency of the marketing function is their common goal.

Key Words: *Marketing function, marketing effectiveness, marketing efficiency, marketing department, marketing manager.*

JEL Classification: *M31.*

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MEDIA PORTRAYALS OF REGIONS IN THE CZECH REPUBLIC: SELECTED ISSUES

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Introduction

Not surprisingly, 21st century is quite frequently referred to as the century of information. Informational needs currently represent such an important category that they are comparable with the saturation of physiological needs. Less attention is usually devoted to the territorial patterns of information.

Every territory can be characterized by both material and intangible characteristics [1], [20]. Spatial distribution of population is of utmost importance in this respect as human activities form material structures, which surround us. Nonetheless, all territories are describable also from intangible perspective. Overall atmosphere, reputation, image as well as position on the mental map can be ranked among typical attributes of the intangible dimension of the space [9], [16], [19].

Mental maps represent increasingly popular notion of our times. Mental maps are formed on the basis of aggregation of individual images of particular spots and territories. From this standpoint, the image of the territory should be perceived as overall picture and reputation of given area in the eyes of the wide public. Mental maps reflect the psychological representation of space. [5] showed that mental maps are not mere preference surfaces but also predictors of consequent spatial behavior. Growing importance of mental maps is in compliance with recent upsurge of soft location factors.

Media – and no matter whether printed, such as newspapers or journals, or electronic, such as TV, radio or on-line content – are undoubtedly the primary source of information. At the same time, media formed the environment that directs our everyday activities. Media influence the functioning of individual subjects as well as whole territories. In brief, individuals or enterprises that do not appear in media are losing their existence in virtual world and become inconspicuous in the real world as well. And the same applies to regions. Regions without media publicity are largely omitted by investors, tourists as well as wide public. If the region appears in the media it still does not mean any victory since investors, tourists and the wide public are pretty sensitive on the composition of news about individual territories. If the region is depicted in a positive way, it often lures the above mentioned target groups; vice versa, negative news repel these target groups and the region can easily fall into psychological and economic vicious circle. Put succinctly, media in relation to regional development do matter [4], [8], [10].

Media influence readers, listeners or TV viewers in the short run. In case that certain themes are repeated more frequently, attitudes and behavior of the population can be affected in the longer run. Further factors shaping mental maps in the longer run are educational institutions, family or surrounding milieu.

Image of the region should characterize its specific supply and distinctiveness. In reality, territorial image very often does not correspond to the objective reality, which is caused primarily by the processes of agenda-setting and agenda-cutting that are used in various kinds of media rather frequently.

The traditional mission of media is objective, accurate and unbiased depiction of reality. However, contemporary media can be already perceived as co-creators of the milieu we are living in. Regarding the great and steadily growing interconnectedness of the world, media can show just selective cuts of complex reality. People are thus informed about the events but at the same time media more or less conspicuously direct their behavior and the perception of

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reality. Many people even accept opinions presented by media in a very sophisticated way. Agenda-setting, i.e. accentuation of chosen events or agenda-cutting, i.e. ignorance of selected occurrences play increasingly important role in this context [11], [12].

At the same time, the possibilities to control whether media fulfill their mission, i.e. objective and unbiased coverage are practically eliminated, since there are not so many individuals that possess sufficient time and energy to check the primary sources of information and to verify the validity of media informing. Moreover, the quality of information itself is heavily dependent upon the way of interpretation and explanation of events or phenomena. Indeed, media bias is one of the most important attributes of contemporary coverage.

From this point of view, the conception of gatekeeping is of great importance. Gatekeeping should be treated as the process through which information is filtered for dissemination, be it publication, broadcasting, internet or some other mode of communication. Gatekeeping ranges from a reporter deciding which sources are selected to be included in a story to editors determining which stories are printed or covered. The process concerns also media owners as well as advertisers.

Process of gatekeeping designs not only which information is chosen, but also what the content and nature of the messages, such as news, will be. The most important attributes of gatekeeping are as follows [2], [15]:

- In accomplishing their monitoring functions, all media have a very large amount of stories brought every day by reporters.
- Only a limited amount of time or space is available in any medium for its daily presentations of the news to its audience. The remaining room is devoted primarily to advertising.
- Within any news organization there exists a news perspective, a subculture sui generis that includes a complex set of criteria for evaluating a particular news story – criteria based on economic needs of the medium, organizational policies and some other categories.
- The above criteria are used by editors, news directors, and other personnel who select a limited number of news stories for presentation to the public. These news are presented in ways such that the requirements of the medium and the preferences of the audience are met.
- Personnel in the media is acting as gatekeepers, letting some stories pass through the system but keeping others out, thus limiting, controlling, and shaping the public's knowledge of the entirety of actual events taking place in reality.

From territorial point of view, media constitute certain informational gate between inner, i.e. municipal and regional actors of territorial development and outer groups, such as visitors, potential visitors, investors, non-regional entrepreneurs etc. Local/regional politicians, institutions or entrepreneurial subjects strive for the attraction of media attention and address their voters, citizens or employees just by means of media. And vice versa, these relevant players of local and regional development get the important information for their decision-making through media again. Not surprisingly, media by themselves became relevant actors of territorial development. Subsequently, we are currently entitled to speak about media-territorial or directly meditorial development, rather than about mere territorial development [17].

We can distinguish local, regional and national media. Basically, it is scalar differentiation of media. Obviously, national media are the most influential ones. For the purposes of our work, we will focus primarily upon national media, because they inform not only about national or foreign issues but also about particular regions. And just the news concerning regions that are mentioned at the national level substantially co-determine the creation of mental maps.

In many countries, spatial distribution of media is rather centralized and all principal media are concentrated usually into the capital city, which is also the case of Czech Republic. At the same time, one has to consider that above media centres typically act also as administrative, political and socio-cultural hubs. This is the factor that may affect territorial pattern and composition of the news. However, there are much more sources of media bias.

In order to capture the relation between media and regions, authors of this paper focused on TV. TV coverage has one of the highest impacts on the public on the one hand and is representative enough on the other [14]. Comparisons show that TV coverage agenda to a large extent represents also press or radio coverage agenda [14]. That is why TV coverage will be taken as a point of departure for this research.

The main objective of this article is to analyze and evaluate selected aspects of NUTS III regions portrayals within national TV coverage. Whole research has been accomplished primarily from qualitative point of view. Added value of the paper is substantially influenced by the relative newness of the whole topic.

1. Materials and Methods

The empirical analysis in this paper is based on unique data purchased from Media Tenor, Ltd. This company deals with a continuous and systematic analysis of media reports in the Czech Republic. The Media Tenor, Ltd. offers a complete set of analytical services based on the content analysis of media. It accurately evaluates both qualitative and quantitative aspects of media contributions. Analytical and consulting services are usually used by private companies, political parties, PR agencies, local governments, scholars as well as media editors.

In this paper, we investigated TV coverage which was represented by evening news of 3 principal TV companies in the Czech Republic. Our research therefore monitored Události and Události, komentáře of Czech TV, both of them representing public TV. On the other hand, Zprávy constitutes part of private FTV Prima air time and the same applies to Televizní noviny of TV Nova. Our research covers the period between 2004 and 2011 years, which is maximum possible time in this realm. Thus one can already get at least an essential overview of developmental tendencies in the researched domain.

Our analysis and interpretation is based on content structure of contributions appearing in national TVs and related to individual NUTS III regions in the Czech Republic. Individual themes related to country's self-governing regions include relevant economic, social as well as environmental aspects of life in these territories.

For the purposes of this text, three basic research hypotheses have been formulated. The hypotheses tested in our paper are defined as follows:

*H*1: The average number of contributions in each thematic pillar is comparable within individual regions.

*H*2: The representation of contributions from a particular pillar is comparable among regions.

*H*3: Independence between region and pillar variables can be expected.

In this paper, the methods of correspondence analysis and Kruskal-Wallis test procedure will be utilised. The Kruskal-Wallis test or nonparametric analysis of variance (ANOVA) is usually used when one wants to test the difference between two or more groups when data sample doesn't meet assumption of normality. Correspondence analysis is appropriate approach when attempting to determine the proximal relationships among two or more categorical variables. When having categorical variables the method of correspondence analysis is similar to the usage of correlation analysis or principal components analysis for continuous or nearly continuous variables.

1.1 Analysis of Variance

The first analytical approach, which will be applied in this paper, is the analysis of variance, namely the Kruskal-Wallis test. The Kruskal-Wallis test is usually used when there is one nominal variable and one measurement variable, and the measurement variable does not meet an assumption of normality. In that case, a standard one-way ANOVA may lead to inaccurate estimates of the p-value when the data are very far from normal distribution. The Kruskal-Wallis test belongs to a group of nonparametric tests and is equivalent to the standard one-way ANOVA. This test is a logical extension of the Mann-Whitney U test and allows us the comparison of more than two independent groups. It is most commonly used when we wish to compare three or more sets of scores that come from different groups [13].

The Kruskal-Wallis test does not expect an assumption that the data are normally distributed. However, it does assume that the observations in each group come from populations with the same shape of distribution. In other words, if different groups have different shapes, for instance one is skewed to the left and another one is skewed to the right, or they have different variances, the Kruskal-Wallis test may give inaccurate results. For details, see [3]. In that kind of situation, maybe one could look into some kind of bootstrap analysis.

The null hypothesis in case of the Kruskal-Wallis test is that the samples come from populations with certain characteristics. These characteristics entail there is 0.5 probability that a random observation from one group is greater than a random observation from another group. The Kruskal-Wallis test does not test the null hypothesis that the populations have identical means, which is the null hypothesis in case of one-way ANOVA. The Kruskal-Wallis test also does not test the null hypothesis that the populations have equal medians, although you will see this error in some statistics textbooks.

Like most non-parametric tests, the Kruskal-Wallis test is also performed on ranked data, so that observations are converted to their ranks in the overall data set, and the smallest value gets a rank of 1, the next smallest gets a rank of 2, etc. Tied observations get average ranks; therefore if there were two identical values occupying the seventh and eighth smallest places, all would get a rank of 7.5 etc.

The sum of the ranks is calculated for each group, then the test statistic H is calculated. H is given by a rather formidable formula that basically represents the variance of the ranks among groups, with an adjustment for the number of ties. If the null hypothesis is true, the test statistic H is approximately chi-square distributed, which means that the probability of getting a particular value of H by chance is the p-value corresponding to a chi-square equal to H. The degrees of freedom represent the number of groups minus 1.

Analysis of variance will be utilised for the verification of hypotheses H1 and H2.

1.2 Measurement of Correspondence in a Crosstabulation

Correspondence analysis is a multivariate statistical technique proposed by [7] and later developed by [6]. The correspondence analysis denotes a nonparametric approach which does not calculate any statistical significance test since it is not based on a probability distribution assumption.

The correspondence analysis itself represents an algorithm which is capable of some measurement of correspondence between the rows and the columns in a correspondence table. When centring the columns and rows of correspondence table and using chi-square distances it corresponds to standard correspondence analysis. Nevertheless, using alternative centring ways combined with another type of distances allows for an alternative representation of correspondence table in a low-dimensional space.

As the measure of correspondence any association, similarity, confusion or interaction between the column and row variables can be considered. Common type of correspondence table is a crosstabulation with the cells containing frequency counts. However, when using a typical crosstabulation it does not usually provide a clear picture of the nature of correspondence between variables, especially if the variables of interest are nominal and in addition contain numerous categories.

To summarize, correspondence analysis is usually performed on contingency tables of size $m \times n$ where m represents the number of rows and n denotes the number of columns in a contingency table. From statistical point of view, a crosstabulation is a type of table in a matrix format that displays the multivariate frequency distribution of the variables. A crucial problem of multivariate statistics is finding dependence structure underlying the variables contained in high dimensional contingency tables.

When using correspondence analysis approach, a contingency table of frequencies is usually standardized firstly. Thus, the relative frequencies across all cells sum to 1.0. In typical correspondence analysis the entries in the table represent the relative frequencies in terms of the distances between individual columns and rows in a low-dimensional space. When applying correspondence analysis procedure, all used data should be nonnegative and moreover on the same scale. The method of correspondence analysis deals with rows and columns equivalently.

The contingency tables offer several measures of association and tests of association. For instance, chi-square test, Fisher's exact test, Phi coefficient, contingence coefficient C or Cramer's V can be used. An analysis of contingency tables usually includes investigation of row and column profiles and testing for independence via the chi-square test.

The correspondence analysis decomposes the χ^2 statistic associated with this table into orthogonal factors. A chi-squared test, also referred to χ^2 test, is statistical hypothesis test in which the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true. Since correspondence analysis is only descriptive technique, it can be applied to tables whether the χ^2 statistic is appropriate or not. When the number of categories is quite large and the assumptions of chi-square test are not fulfilled, the chi-square test sometimes is not able to detect the dependence structure clearly.

The correspondence analysis is able to examine the relationship between two variables graphically in multidimensional space. One can compute column and row scores and make a plot based on the scores. Thus, the basic aim of correspondence analysis is to create biplots for correspondence tables. The correspondence plot allows us to visualize mutual relationships among categories spatially on dimensional axes. In other words, with a help of empirically derived dimensions it can be seen which categories are close to other categories. Therefore, projecting points for one variable on the vector from the origin to a category point of the other variable represents the relationship between analysed variables.

To sum it up, with a help of this approach one can see which categories of used variable are similar to each other or/and which categories of two different variables are related. Moreover, correspondence analysis procedure allows us to fit supplementary points into a space which has been defined by active points.

Correspondence analysis is able to work with nominal variables, ordinal variables, and also with ratio variables, albeit creation of discrete categories from a continuous variable is generally not recommended. Since in a typical correspondence table, variables in the rows and columns are assumed to denote unordered categories, the nominal scaling is usually used. It means that the only consideration is the fact that some objects are in the same category while others are not. Nothing can be assumed about the distance or order between categories of the same variable.

Correspondence analysis will be used for the evaluation of hypothesis H3.

2. Results and Discussion

Statistical analyzes presented in this paper were accomplished on the data file representing the individual contributions presented in the major news programs from different NUTS III regions in the public Czech Television (Události and Události, komentáře), commercial TV Nova (Televizní noviny) and FTV Prima (Zprávy) for the period from April 2004 to December 2011. Contributions are thematically divided into 30 categories and 10 pillars (social, environmental, economic, education and science, public affairs, European and international, security, accidents, sport and justice). Altogether the amount of 54,667 contributions was monitored by this way.

Statistical data were analysed by means of contingency tables, correspondence analysis and non-parametric Kruskal-Wallis test with a help of Microsoft Excel and IBM SPSS Statistics software.

2.1 Description of Data Set

As a first step of our analysis we divided default 30 thematic categories of original data sets ob-

Tab. 1: Distribution of particular thematic pillars

	Frequency	Percent
SECURITY	13,630	24.9
SOCIAL	12,826	23.5
ACCIDENTS	10,213	18.7
ECONOMIC	5,731	10.5
PUBLIC AFFAIRS	4,030	7.4
ENVIRONMENTAL	3,213	5.9
JUSTICE	2,147	3.9
EUROPEAN & INTERNATIONAL	1,106	2.0
EDUCATION & SCIENCE	983	1.8
SPORT	788	1.4
Total	54,667	100.0

Source: authors

tained by Media Tenor Ltd. into 10 basic thematic pillars in order to simplify their classification. The description of original data and default 30 categories can be found in [17] and [18]. Before the analyses the source data were transformed from Excel tables into uniform datasheet for IBM SPSS Statistics software and categorized by authors. Tab. 1 shows the distribution of all the news among particular pillars.

Almost one half of the news (49.5%) is of tabloid character, which includes *security*, *accidents* and *justice*. This is in line with gatekeeping conception that has much to do with editorial stereotypes (see also [15]). As it can be seen in Table 1, *security* and *accident* pillars together with *social* pillar occupy the top of the rankings. *European & international* and *education & science* pillars have remained at the opposite end of the ladder together with *sport* pillar.

In order to describe mutual interdependence among thematic pillars and news programs contingency table was created, see Tab. 2. Table 2 provides us with synthetic information about percentage distribution of individual thematic pillars within researched news programs.

Tab. 2: Contingency table (% within news program)

	News Program				Total
	Televizní noviny (Nova TV)	Události (CT)	Události, komentáře (CT)	Zprávy (FTV Prima)	
SECURITY	30.6%	19.3%	17.2%	26.8%	24.9%
SOCIAL	21.1%	28.3%	26.7%	20.2%	23.5%
ACCIDENTS	20.0%	14.8%	15.0%	22.4%	18.7%
ECONOMIC	9.0%	11.3%	14.9%	9.6%	10.5%
PUBLIC AFFAIRS	5.2%	10.3%	10.0%	6.1%	7.4%
ENVIRONMENTAL	7.1%	4.6%	3.6%	6.5%	5.9%
JUSTICE	3.2%	4.5%	5.5%	3.6%	3.9%
EUROPEAN & I NTERNATIONAL	1.3%	2.9%	3.2%	1.5%	2.0%
EDUCATION & SCIENCE	1.2%	2.1%	2.6%	1.9%	1.8%
SPORT	1.3%	1.8%	1.2%	1.4%	1.4%
Total	100% (18,558)	100% (14,997)	100% (6,139)	100% (14,973)	100% (54,667)

Source: authors

While the public Czech TV has the largest share of contributions from *social* pillar, followed by *security* and *accidents* pillars, both commercial televisions (Nova TV, FTV Prima) have *security* pillar on the top, followed by relatively comparable proportion of *social* and *accidents* pillars. The economic and public affairs pillars have a greater representation in news programs of Czech TV. All TV stations have the smallest share of *European & international*, *sport* and *education* & *science* pillars.

As a next step of our analysis we measured potential dependence in Tab. 2. Results are shown in Tab. 3.

Pearson Chi-square test of independence shows that significant dependency of pillar structure on TV program exists (Sig. = 0.000). The value of Cramer V coefficient of contingency means the weak dependency only.

The maximal number of contributions is concentrated at *Televizní noviny* of Nova TV; slightly less contributions is brought by *Události*

Tab. 3: Measures of dependence in contingency table

	Value	Asymptotic Significance
Pearson Chi-Square	2,219.098	0.000
Cramer's V	0.116	
N of valid cases	54,667	

Source: authors

(Czech TV) and *Zprávy* (FTV Prima). The news program *Události, komentáře* (Czech TV) contains significantly smaller number of contributions, but this program is oriented into important and serious topics with more detailed analyses.

In order to present described interdependence among thematic pillars and news programs from visual perspective, the correspondence analysis containing 2 dimensions was used in the form of scatter plot, see Fig. 1.

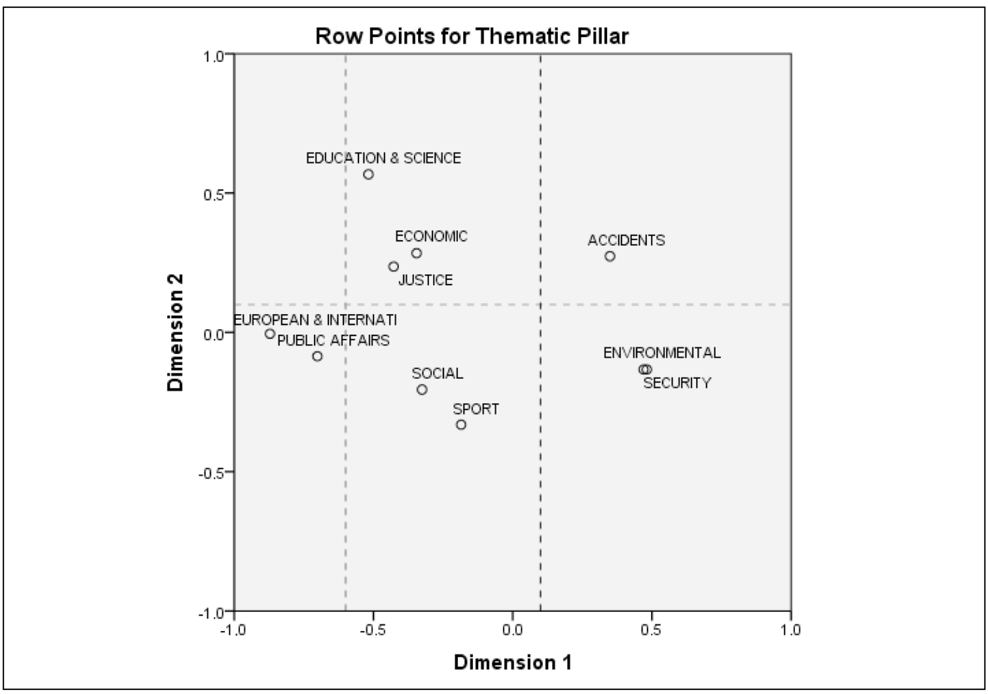
The horizontal axis in Fig. 1 (Dimension 1) divides particular pillars into 3 basic segments:

a) *European & international, public affairs* (public topics),
b) *Social, sport, justice, economic, education & science* (societal topics),
c) *Security, environmental, accidents* (tabloid topics).

On the other hand, the vertical axis in Fig. 1 (Dimension 2) subdivides all pillars into 2 segments:

a) *Education & science, economics, justice, accidents* (everyday topics),
b) *European & international, public affairs, social, sport, environmental, security* (remaining topics).

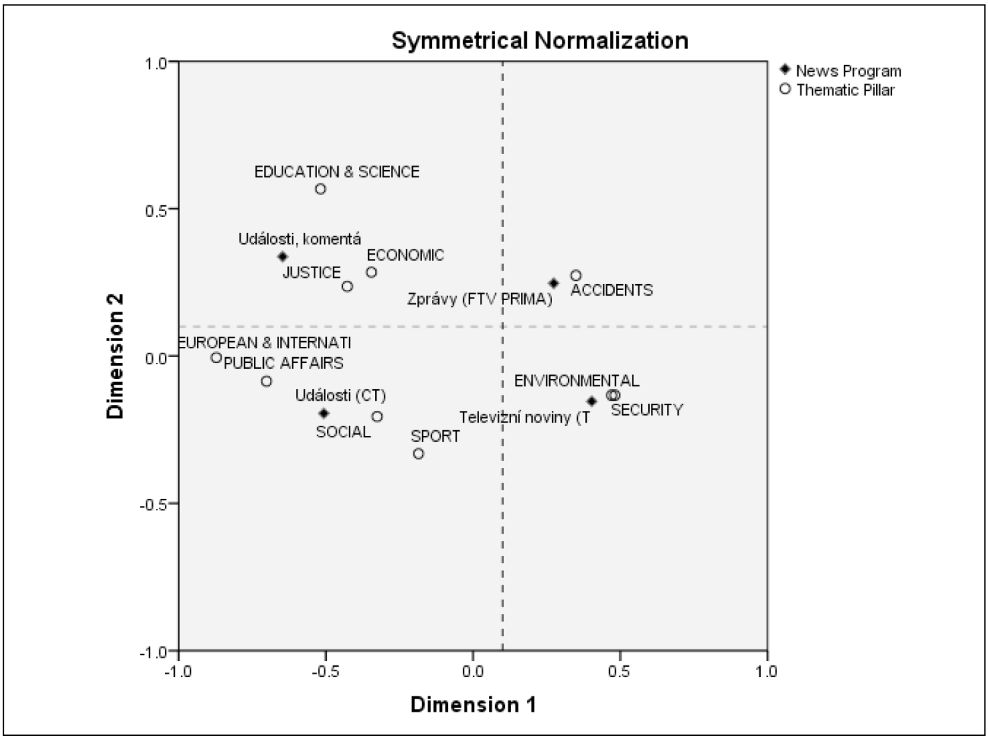
Fig. 1: Scatter plot for pillars



Source: authors

In order to clarify the profiles of above mentioned TV programs in a better way, we can display both pillars and TV programs through the correspondence analysis into one location map, see Fig. 2. Two dimensions of the correspondence analysis are covering approximately 98% of the variability of the original crosstable, which detects a very high rate of correspondence.

Fig. 2: Scatter plot for both pillars and programs



Source: authors

With the help of Fig. 2 one can determine which thematic pillars are more accentuated than the others in particular news programs. The first dimension (Dimension 1) divides the public news programs (on the left side of the plot) from the commercial ones (on the right). The second dimension (Dimension 2) facilitates the differentiation of TV news as to thematic categories. The content differences between the programs of public Czech TV are larger than the differences between the news programs of both commercial TV stations. It can be said that *Události, komentáře* (Czech TV) and *Zprávy* (FTV Prima) are orientated into more specific and profound topics.

The dimensions in Fig. 2 can be described as follows:

a) Dimension 1: public – commercial (tabloid),
b) Dimension 2: general (societal) – specific (familiar/individual).

From this perspective it is clear that *Události* of Czech TV program concentrates primarily on *social, public affairs, European & international, sport* pillars, while *Události, komentáře* are focusing on economics, justice, education & science pillars, which is distinctive in comparison with other TV programs. It is possible to claim that Czech TV is able to produce two different news programs with various specializations and more distinct profile. On the other hand *Televizní Noviny* of TV Nova is more focused on environmental and security pillars while other *Zprávy* of FTV Prima is closely linked to accidents pillar. The last result is consistent with the fact that FTV Prima produces a special part of news called Crime Report (*Krimi Zprávy*).

Results we obtained are in consonance with previous analyses [18].

2.2 Appearance of News in Various Regions and Pillars

In the next step of our empirical analysis all the hypotheses as formulated in chapter 2 will be verified. For the purposes of our analysis the default data were transformed into the structure with the following factors:

- region (covering NUTS III territories),
- year,
- thematic pillar.

The number of news per year, per NUTS III region and per particular pillar serves as quantitative indicators. It should be also mentioned that two NUTS III regions – Prague and Central Bohemia were joined into one territory. It was done due to the better correspondence with natural geographical characteristics on the one hand and suppression of specific urban character of the capital city on the other. Last but not least, unification of Prague and Central Bohemia into one territorial unit turned out to be correct and useful also in previous researches [17].

a) Hypothesis *H*1: The average number of contributions in each thematic pillar is comparable within individual regions.

We will compare the average annual number of posts in each region and pillars using one-dimensional analysis of variance. Since the distribution of data set doesn't exhibit normal probability distribution as confirmed by Jarque-Bera test the non-parametric analysis of variance represented by Kruskal-Wallis test will be used.

First, it will be compared the average number of contributions per capita (per 100,000 inhabitants) for a region among particular pillars. Results of Kruskal-Wallis test are shown in Tab. 4.

Tab. 4: Non-parametric analysis of variance (Kruskal-Wallis test)

Number of news per capita	
Kruskal-Wallis *H*	741.189
df	9
Asymptotic Significance	0.000

Source: authors

The asymptotic significance is less than 0.05, so the hypothesis *H*1 can be rejected at 5% significance level which means that the differences in the number of contributions per capita among the pillars are statistically significant.

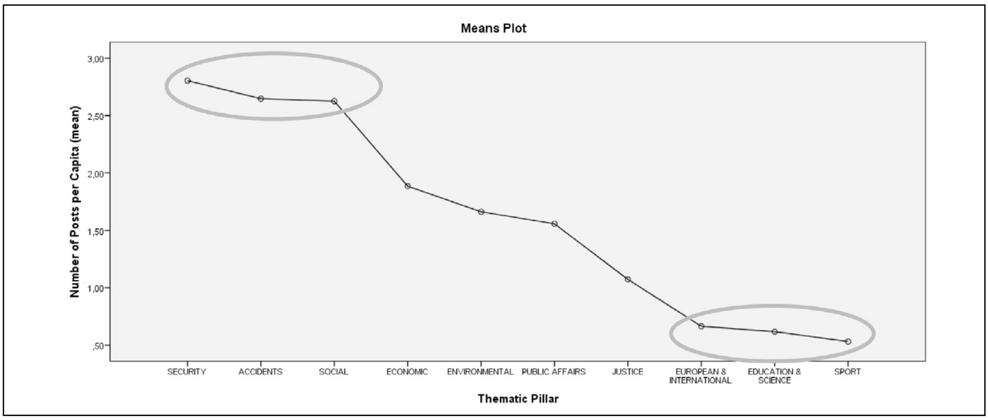
The largest amounts of contributions per capita throughout the Czech Republic are related to *security, accident* and *social* pillars. Our results confirm the previous research findings that in the news programs (especially in commercial TVs) tabloid topics are clearly [18]. The same result can be expressed via sorted means plot which is often used to describe the result of analysis of variance tests, see Fig. 3.

On the other hand, *European & international, education* & *science* and *sport* pillars proved to have the smallest share among all pillars. Moreover, the same applies to practically all NUTS III regions. The only exceptions are Karlovy Vary and unified Prague and Central Bohemia regions where *social* pillar is the most abundant one.

b) Hypothesis *H*2: The representation of contributions from a particular pillar is comparable among regions.

To evaluate hypothesis *H*2 we will again utilise the analysis of variance with one factor. When accomplishing the analysis of variance, the average number of contributions for a pillar per capita (per 100,000 inhabitants) will be compared among individual NUTS III regions as the factor.

Fig. 3: Means plot for pillars



Source: authors

To test the differences between the regions the Kruskal-Wallis test will be used again because the probability distribution of data set doesn't exhibit normality. Results of the Kruskal-Wallis test for the hypothesis *H*2 are shown in Tab. 5.

Tab. 5: Non-parametric analysis of variance (Kruskal-Wallis test)

Number of news per capita	
Kruskal-Wallis *H*	33.110
df	12
Asymptotic Significance	0.001

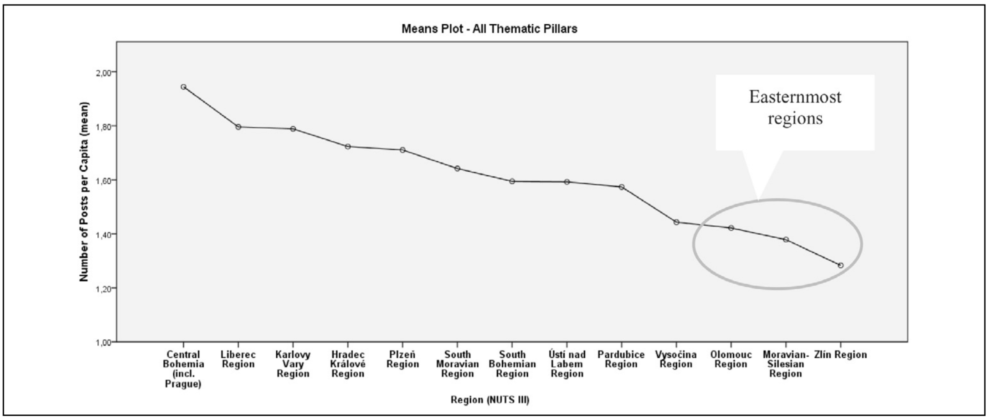
Source: authors

The hypothesis H2 of a comparable number of contributions among regions can be rejected, since asymptotic significance is less than 0.05 again. We must therefore assume that some regions are associated with more contributions than it would correspond to their population size. Similar results have been reached by application of regression analysis [18]. It has been confirmed that the number of contributions per capita decreases with the distance from the capital city.

If we display the sorted means plot, it is clear that equality is disrupted especially by Central Bohemia Region including Prague, which concentrates most of the contributions, even though we recalculated the number of contributions per capita. Moravian regions with the exception of South Moravia with Brno as the “capital” of Moravia are at the end of this sorted list; see Fig. 4.

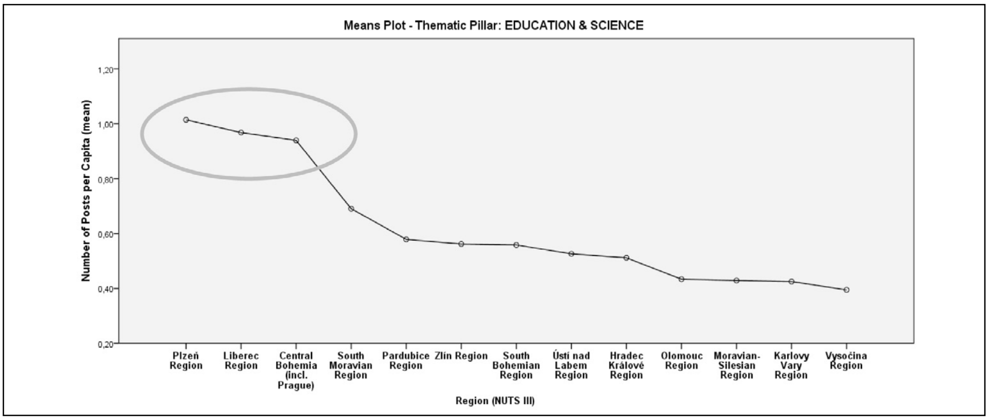
When comparing the profiles of news per capita among regions for each pillar, we can find (compared to the previous hypothesis H1) significant differences between the pillars. It means that the order of regions in the profile is different just due to the pillar. For example, we can analyse *education* & *science* pillar in more detail. The *education* & *science* pillar has a clear peak in Plzeň region, followed by Liberec and Central Moravia & Central Bohemia & Prague regions, which can be related to the affair of Faculty of Law, University of West Bohemia in Plzeň that was one of the most interesting news at a certain time. On other hand, Karlovy Vary region belongs to the regions with lowest number of contributions per

Fig. 4: Means plot for regions (NUTS III)



Source: authors

Fig. 5: Means plot for education & science pillar by regions (NUTS III)



Source: authors

capita, which can be ascribed to the fact that Karlovy Vary is one of the few regional capitals without university or college, see Fig. 5.

It is worth noticing regions, which dominate in individual pillars. For instance, Central Bohemia & Prague region always dominate in all investigated pillars. In other words, the "capital city" region is always among the top three regions when analysing particular pillars. The only exception is *environmental* & *accident* pillar.

To sum it up, the following Tab. 6 illustrates regions that have the most frequent representation of contributions in each pillar. Three regions with the highest number of contributions per capita have been always selected.

Tab. 6: Regions with the most frequent representation of contributions in each pillar

All pillars together	Central Bohemia & Prague, Liberec, Karlovy Vary
SOCIAL	Central Bohemia & Prague, Karlovy Vary, Liberec
ENVIRONMENTAL	**Hradec Králové,** Liberec, **South Bohemia**
ECONOMIC	Central Bohemia & Prague, Karlovy Vary, **Ústí nad Labem**
PUBLIC AFFAIRS	Karlovary Vary, Central Bohemia & Prague, **Hradec Králové**
EDUCATION & SCIENCE	**Plzeň,** Liberec, Central Bohemia & Prague
EUROPEAN & INTERNATIONAL	Central Bohemia & Prague, **Olomouc, South Bohemia**
SECURITY	Central Bohemia & Prague, Karlovy Vary, **Plzeň**
ACCIDENTS	Liberec, Karlovy Vary, **Plzeň**
JUSTICE	**Hradec Králové,** Central Bohemia & Prague, **Plzeň**
SPORT	Liberec, **Pardubice,** Central Bohemia & Prague

Source: authors

The bolded regions in Tab. 6 are found in top three regions in relation to a separate pillar, but not in the full profile. The most frequent bolded are Plzeň and Hradec Králové regions. If we look in more detail at Tab. 6 we can notice some interesting exceptions. For instance, South Bohemia region significantly occur in *environmental* and *European & international* pillars (atomic power plant and disputes with neighbouring Austria), Ústí nad Labem region in *economic* pillar (problems with the restructuring of heavy industry), Olomouc region in *European & international* pillar (historical city with the seat of the Archdiocese of Moravia) and Pardubice region in *sport* pillar (famous ice hockey club with a new stadium, Velká pardubická steeplechase).

c) Hypothesis *H*3: Independence between region and pillar variables can be expected.

To evaluate hypothesis *H*3 the methods of correspondence analysis will be used. In that case we will work with absolute number of contributions, so that we will not take into account the size of the regions (per capita) or other transformation of data as we did in our previous analysis.

First of all we have to test the independence between region and pillar variables, see Tab. 7.

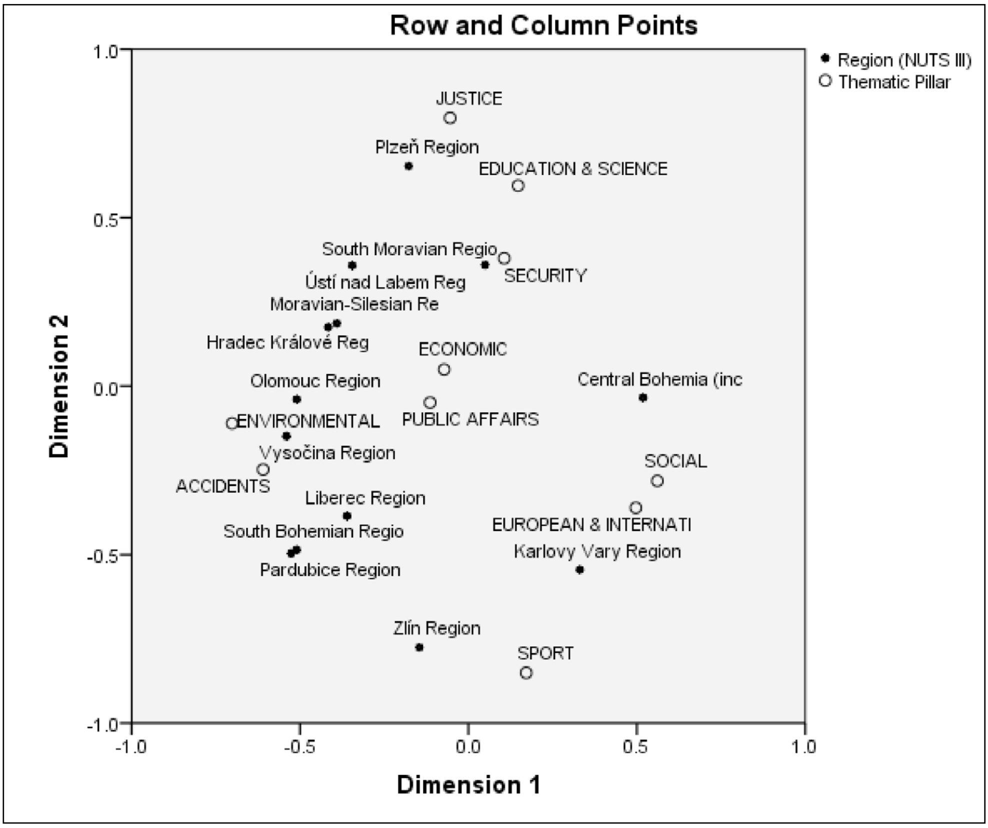
Tab. 7: Measures of dependence in contingency table

	Value	Asymptotic Significance
Pearson Chi-Square	3,602.409	0.000
Cramer's *V*	0.086	
N of valid cases	54,667	

Source: authors

The significance of chi-square test is less than 0.05, so that the dependence between regions and pillars can be proved. In order to present described dependence among thematic pillars and regions graphically the correspondence analysis consisting of 2 dimensions was used. The results of correspondence analysis are presented as a scatter biplot, see Fig. 6. For completeness of our analysis we should add that the correspondence analysis describes 69.3% of relationships in the contingency table which is higher value than on average.

Fig. 6: Scatter biplot for both pillars and regions (NUTS III)



Source: authors

When analysing Fig. 6 one can see some clear relations among regions and pillars. Plzeň region is very tightly linked with *education & science* and *justice* pillars thanks to the affair of the Faculty of Law. Karlovy Vary region is closely related to *European & international* and social pillars due to the annually held International Film Festival, famous spa as well as large and economically powerful Russian-speaking minority. Fig. 6 also confirms specificity of Central Bohemia & Prague region which does not neighbour with any other region or pillar. Central Bohemia & Prague region is the capital city region so that it is untypical in the number of contributions per capita and thematic structure. This region is located in the middle right part of Fig. 6 that means the greater amount of “long term issues” topics. On the other hand Zlín region shows a very small number of contributions per capita in most pillars, making it uninteresting region for journalists. Zlín region is situated in the middle bottom of Fig. 6 and can be partly linked with sport just due to the presence of many sport clubs mainly in regional metropolis.

The next interesting information that can be derived from the Fig. 6 is the relative proximity of Moravian-Silesian and Ústí NUTS III regions. In both cases we are dealing with traditional industrial regions that were compelled to undergo rather painful transformation in recent years and their socioeconomic characteristics bear a great resemblance.

Proximity of certain regions and pillars appears to be seemingly surprising; nearness of Vysočina region and accidents pillar can be attributed to the presence of principal highway in the country as well as to an army helicopter accident in 2004 and another army aircraft crash in 2010. The region itself is less populous and moreover partly of rural character. In case of South Moravian region and security pillar, the explanation consists in serious affair of children abuse within religious sect in 2007 and bribery at the Brno city hall in 2010. However, we should confess certain proximities like Moravian-Silesian and Hradec Králové regions or South Bohemian and Pardubice regions can be barely explained if we disregard gatekeeping principles.

Conclusions

This paper confirms the importance of TV contributions, which appear in national broadcasting and are related to individual regions within the country. Division of themes into 10 pillars turned out to be very useful just for the sake of further conceptualization of regional media portrayals.

Correspondence analysis confirmed that structure of contributions of both private TV stations bears a certain resemblance, which is palpable mainly in the concentration on commercial or tabloid issues. Coverage of private TV Nova and FTV Prima differs significantly from that of public Czech TV, which indeed deals with public affairs more intensely. It should be also added public Czech TV produces two different news programs with relatively distinct profiles.

For the purposes of further analysis, unification of Prague with surrounding Central Bohemia proved to be useful. This newly created territorial unit is in compliance with natural geographical characteristics on the one hand and eliminates the specific urban character of Prague – so dissimilar with other NUTS III regions – on the other. In that way, the comparison of individual regions has been facilitated.

Analysis of variance represented by non-parametric Kruskal-Wallis test was used for the verification of hypotheses *H*1 and *H*2. Hypothesis *H*1 "The average number of contributions in each thematic pillar is comparable within individual regions" was rejected at 5% significance level. The same, i.e. the rejection at 5% significance level applies also to hypothesis *H*2 formulated as follows: "The representation of contributions from a particular pillar is comparable among regions".

Hypothesis *H*3 was evaluated via application of chi-square test and correspondence analysis. The hypothesis, which sounds "Independence between region and pillar variables can be expected", was rejected too. For instance, Plzeň region can be associated with education & science or justice pillars, Vysočina with accidents pillar or South Moravian region with security pillar.

To sum it up, our paper revealed that media landscape of the Czech Republic does not always comply with genuine features of individual regions. Editorial stereotypes manifest themselves rather strongly and we are indeed entitled to talk about importance of gatekeeping. And since an amazingly small amount of research has been done on the relation between media and regions, both scholars and practitioners face an indubitable challenge in their future activities.

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Abstract

MEDIA PORTRAYALS OF REGIONS IN THE CZECH REPUBLIC: SELECTED ISSUES

Jan Sucháček, Petr Seďa, Václav Friedrich, Jaroslav Koutský

Amount of information provided by media is growing virtually every day. Surprisingly, attention devoted to the spatial implications of media information is far from sufficient. Existing researches bring ample evidence that TV coverage embodies media agenda in a satisfactory manner as it has rather profound impact on the public on the one hand and is representative enough on the other. Our paper deals with TV news reporting related to NUTS III regions in the Czech Republic. The main perspective adopted in this article is a qualitative one, which facilitates the evaluation of TV news contents. We are deliberately focusing on national TV broadcasting, which is the most influential one. Individual contributions we evaluate appeared in the framework of news reporting in public Czech TV and private Nova and Prima. In spite of severe limitations in media data, our paper covers the period between the years 2004 and 2011, which helps to underpin our conclusions in a sufficient way. Contributions, which are related to individual NUTS III regions and resonate at the national level, constitute the focal point of our research. TV reflection of material reality is of intangible character; nonetheless similarly to material categories, one can identify spatial as well as thematic differentiation and even patterns also in the sphere of TV news reporting. There are only little doubts that media landscape and closely associated mental maps have been largely underestimated so far. Thus, these topics represent one of pivotal theoretical and practical challenges in the field of spatial sciences, which holds true for post-transition country even more.

Key Words: *NUTS III regions, Czech Republic, media, TV news reporting, analysis of variance, correspondence analysis.*

JEL Classification: *B52, R10, R19, M30, M39, Z10.*

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PROCESNÍ MANAGEMENT VE VEŘEJNÉ SPRÁVĚ

Václav Řepa

Veřejná správa, e-government a procesní řízení

Během téměř 20 let existence tohoto přístupu a způsobu myšlení, se tzv. „business procesy" staly běžnou součástí manažerského slovníku. Význam „procesní orientace" trvale vzrůstá i v oblasti, kde tento přelomový přístup původně vznikl: v oblasti aplikované informatiky. Vývoj zde stále výrazněji ovlivňuje metodický přístup tzv. „*Enterprise Architecture*" a právě tento přístup poslední dobou silně konverguje s myšlenkami procesní orientace, jež jsou dnes již fakticky jeho integrální součástí. Rovněž vývoj informačních technologií zjevně vstřebává myšlenky procesní orientace v podobě technologií „*workflow management*", „*integračních platforem*" apod.

Pojmy „*procesní řízení*" a „*Business Process Reengineering"* ve své podstatě však znamenají mnohem více, než jak jsou běžně v manažerské praxi používány. Především se jedná o skutečně paradigmatický zlom v pojetí řízení organizace. Právě komplexnost této paradigmatické změny činí její uvedení do praxe velmi nesnadným, dokonce správné uchopení a aplikace byť jen základní myšlenky tohoto přístupu rozhodně není triviálním úkolem. Vzhledem k výše uvedeným skutečnostem jsou případy plnohodnotné aplikace myšlenek procesního řízení v praxi podnikového managementu velmi vzácné. Většina reálně uskutečněných aplikací staví na toliko okrajových přínosech tohoto přístupu, jako jsou: částečné zlepšení administrativních postupů, snižování času, nákladů, „automatizace" agend, atd., aniž by přitom došlo ke skutečně zásadní změně manažerských postupů. Zejména u větších organizací také typicky degeneruje původně progresivní snaha o aplikaci procesního řízení do formalismu a ustrne v podobě toliko deklarativního procesního modelu, aniž by došlo ke skutečným efektům procesního řízení, jak přesvědčivě ukazuje průzkum v [24].

Skutečnou podstatou myšlenky procesního řízení je však právě **zásadní změna manažerských postupů**, právě ta může přinést opravdu dramatické zlepšení. Oblastí, kde to platí ve zvýšené míře, je **veřejná správa**. Jakkoliv bývá veřejná správa považována za tak zásadně odlišnou, že v ní z principu není možno použít manažerské praktiky z tržních firem, tento článek se pokouší ukázat, že právě procesní řízení, jako způsob řízení organizace, je ve veřejné správě nejen plně aplikovatelné, ale především navýsost žádoucí, byť ne snadné. Navíc, typická organizace místní veřejné správy, na niž je zaměřen výzkumný program PARMA [20], z něhož tento článek čerpá praktické zkušenosti, odpovídá typickému střednímu podniku z kategorie SME, jak velikostí a složitostí, tak i obsahem standardních funkčních oblastí. To zde umožňuje plně využít veškerého potenciálu poznání v oblasti Enterprise Architecture, což je důležité zejména pro pozdější fázi realizace změny, jíž procesní řízení přináší.

Klasikové myšlenky procesního řízení M. Hammer a J. Champy uvádějí v [8] dvě hlavní charakteristiky, které by měly být považovány za podstatu myšlenky procesně orientovaného managementu:

- Hlavním rozhodující **důvodem** tohoto přístupu je potřeba **učinit organizaci dostatečně pružnou**, aby mohla operativně měnit své chování v závislosti na změnách okolí a okolností. Těmito změnami se rozumí nejen změny zákaznických preferencí a potřeb, ale také změny možností jejich uspokojování, jež obvykle nastávají rozvojem technologií.
- Hlavním kritickým **důsledkem** výše zmíněného hlavního důvodu, je pak **změna ve**

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způsobu organizace z přísně hierarchické na síťovou, kolaborativní strukturu.

Až teprve poté, co je naplněn výše uvedený primární důvod a organizace v důsledku toho přejde z původně hierarchického na kolaborativní model uspořádání, může být považována v pravém slova smyslu za „procesně řízenou".

Gary L. Neilson, Bruce A. Pasternack a Albert J. Viscio, vicepresidenti organizace Booz-Allen Hamilton [14] o své firmě, prošlé úspěšným reengineeringem, hovoří jako o „e-organizaci". Rozeznávají sedm základních dimenzí, v nichž se „e-organizace" výrazně liší od organizace tradičně vedeného, hierarchicky organizovaného podniku. Těchto sedm dimenzí ukazuje na oblasti života každého podniku, v nichž je vliv reengineeringu nejmarkantnější.

Jednotlivé rozdíly mezi „klasicky vedenou" a „procesně / znalostně vedenou" organizací přesně ilustrují základní typické dopady reengineeringu do života organizace. Podrobnější komentář jednotlivých položek tabulky a další rozvedení těchto myšlenek lze nalézt v [21]. Souhrnně řečeno je porovnání vlastností obou přístupů k řízení organizace v Tab. 1 dobrou ilustrací toho, jak dramatickou změnu ve všech oblastech života organizace procesní přístup přináší. Žádná z oblastí života organizace nezůstane změnou netknuta, ušetřena vpravdě diametrálních změn oproti tradičnímu pojetí. Přitom nejde jen o technické, formální a jasně viditelné záležitosti, jako je organizační struktura, systém pravomocí a odpovědností, vztahy s kooperanty apod., ale také (a dokonce především) o tak abstraktní a těžko uchopitelné aspekty, jako jsou znalosti či dokonce mentální vlastnosti a postoje zaměstnanců.

Tab. 1: Sedm dimenzí procesně řízené organizace

	tradiční organizace	„e-organizace"
Organizační struktura	Hierarchická Příkaz – kontrola	Necentrická, síťová Pružná, snadno změnitelná struktura
Velení	Zaměřené dovnitř organizace Shora-dolů, hierarchické	Vnitřní i vnější zaměření Distribuované – síťové
Vůdcovství	Vůdcem je nadřízený Vůdcové určují agendu Vůdcové vyvolávají změnu	Vůdcem je kdokoliv Vůdcové vytvářejí prostředí pro úspěch Vůdcové vytvářejí kapacity pro změnu
Lidé a kultura	Dlouhodobé odměny Vertikální rozhodování Odměňování jednotlivců a malých týmů	Mentalita „vlastním svou kariéru" Delegace rozhodovací pravomoci Očekávána a odměňována spolupráce
Znalost	Zaměřená na vnitřní procesy Individuální vlastnost	Zaměřená na zákazníky Vlastnost organizace
Soudržnost	„zadrátovaná" v procesech Interní soudržnost firmy	Vize vložená v jednotlivcích Účinek promítnut mimo firmu
Spojenectví	Doplňuje / zvýrazňuje propasti Spojování s externími partnery	Vytváření nové hodnoty a vytěsňování (outsourcing) konkurenčně slabých služeb Spojování s konkurenty, zákazníky a dodavateli

Zdroj: [14]

Výše ilustrovaná komplexnost změny v důsledku aplikace procesního stylu řízení organizace je mimo jiné důvodem k tomu, že samotné provedení takové změny je záležitostí velmi obtížnou a v podstatě dlouhodobou. Jedná se o evoluční proces postupného dozrávání organizace ke změně, jejíž následnou realizací započne další období zrání ke změně následné. Toto poznání nutnosti evolučního pojetí změny, jež do oblasti procesního řízení prvně přinesla práce T. Davenporta [3] a stalo se také základem k pozdějšímu vzniku slavného zralostního modelu CMM [2], vedlo později až k vrcholné práci „otce procesního řízení" M. Hammera, v níž mistrně analyzuje základní atributy a zákonitosti vývoje organizace vlivem procesních změn [7]. Téma zralostních modelů organizace je v kontextu procesního řízení sice kriticky důležité, podrobnější vhled do této problematiky by však již překročil rozměr tohoto článku. Pro vyčerpávající analýzu a srovnání jednotlivých současných přístupů k modelům zralosti viz [23].

Efektivnost, jakož i efektivita veřejné správy vždy byly a stále jsou horkými tématy politiků. Zdá se až, že to, čemu se občas říká „černá díra pro veřejné finance" je dokonce přirozenou, snad i objektivní a tudíž nezměnitelnou vlastností této oblasti. Technologický rozvoj paradoxně dokonce situaci ještě zhoršuje, zcela běžně jsme svědky situací, kdy aplikace tzv. e-governmentu vede k velkým veřejným investicím bez adekvátního efektu, který by tyto investice mohl ospravedlnit. Příklady prokazatelné efektivnosti takových investic prakticky neexistují a jejich ospravedlnění je většinou postaveno na abstraktních argumentech o nutnosti vyhovět požadavku technického pokroku, či směrnicím Evropské unie apod.

Výše uvedené problémy jsou však především velkou výzvou pro oblast teorie managementu. Je zřejmé, že **problém** má své kořeny nikoliv v infrastruktuře (IT), ale **v samotném obsahu, způsobu řízení**. V materiálu OECD [15] je e-government definován jako: „využívání informačních a komunikačních technologií jako nástroje k dosažení lepší správy". Dopad aplikace e-governmentu v nejširším smyslu je prostě lepší vláda – „e-government is more about the government than about ‚e'" [15]. Jakmile však přijmeme tuto myšlenku, musíme si odpovědět na logicky navazující otázky:

- jaké že to změny v činnostech veřejné správy a jejich organizaci by „*e-government*" měl přinést, aby bylo „dosaženo lepší správy"?
- A jak tyto změny realizovat?

Podstata těchto otázek je stejná jako v případě procesního řízení a re-engineeringu u tržně orientovaných firem, tak, jak to definují Hammer a Champy v [8]. Jde o to, jak využít technologii k tomu, aby byla organizace veřejné správy natolik pružná, aby mohla měnit své vnitřní chování v závislosti na změnách ve svém okolí a neustále se měnící technologické možnosti tak využívat optimálně. Zdá se tedy, že k dosažení potřebného účinku a vpravdě smyslu e-governmentu, jak je definuje OECD v [15], je třeba především aplikovat v oblasti veřejné správy myšlenky a principy procesně orientovaného řízení.

Oproti tržně orientovaným podnikům přináší aplikace obecných principů řízení organizace ve veřejné správě řádově větší problémy. Hlavní příčinou je zejména neexistence tržních mechanismů, jež by se samozřejmostí, sobě vlastní, nade vší pochybnost vymezovaly smysluplnost a ukazovaly efektivnost veškerého činění, což vede při aplikaci těchto principů ve veřejné správě k nutnosti značných abstrakcí. V oblasti veřejné správy není snadné odpovědět byť na zcela základní a v tržním prostředí zcela triviální otázky, jako: „Kdo je zákazníkem?", nebo „Co je zájmem zákazníka?". Problémy s aplikací obecných manažerských praktik v oblasti veřejné správy se pak řádově silněji projeví v souvislosti s aplikací procesního řízení a reengineeringu. Tyto problémy se projevují primárně při identifikaci klíčových procesů.

Výše nastíněnou změnu v organizaci v důsledku posunu od tradičního k procesně orientovanému stylu řízení lze chápat jako analogii přechodu z „totalitní" na „demokratický" model života komunity. V případě veřejné správy tato analogie není daleko od skutečného stavu. Tradiční pojetí veřejné správy je založeno na principiální podřízenosti místní správy na státních strukturách. V současnosti je však charakteristický stále větší odklon od tohoto hierarchického pojetí veřejné správy směrem k modelu kolaborativnímu, roste tlak na větší samostatnost a potažmo odpovědnost místních struktur na úkor struktur centrálních, na principu tzv. „*subsidiarity*", jak se stalo zvykem tento trend nazývat v Evropské unii. Činnosti veřejné správy jsou stále více a více vnímány jako služba veřejnosti, spíše než „příkazy vládců" [5], [18]. Spolu s těmito změnami se ovšem také přirozeně zvyšuje odpovědnost veřejnosti za další rozvoj sociálního a politického systému. Tyto změny jsou tudíž přirozeně doprovázeny konkrétními problémy a konflikty, které je zpětně činí aktuálními a jejich řešení nutným. Je zřejmé, že všechny tyto problémy jsou vzájemně úzce provázány, že systém se mění jako celek, že nové paradigma přichází [13].

1. Možnosti aplikace procesního řízení ve veřejné správě

Pro aplikaci procesního řízení v organizaci je vždy třeba nejprve ujasnit tzv. **primární funkci**

organizace, tedy základní strategické hodnoty, které má organizace vytvářet a které vpravdě určují smysl její existence. Z primární funkce pak budou odvozeny veškeré následné, podpůrné interní struktury – infrastruktury organizace. Primární funkcí každé organizace je **dosahování cílů, jež leží v prostředí, v němž tato organizace existuje**, tedy mimo tuto organizaci. Jinak řečeno, smysl organizace je dán tím a jenom tím, co poskytuje svému okolí, systému. Za to v tržním systému dostává zaplaceno, což jediné jí umožňuje existovat dál. Něco podobného ovšem musí platit i v prostředích netržních, aby tato dávala obecný smysl, například ve veřejné správě. I zde musí být smysluplnost každé organizace (zde úřadu) přímo závislá na obecné potřebě služeb, jež systému – prostředí tato organizace poskytuje. U tržních organizací je universálním představitelem cíle primární funkce **zákazník**. Pro důsledné zohledňování role zákazníka, jako představitele základního cíle a důvodu veškerého konání organizace, je za jednu ze základních charakteristik tohoto přístupu k řízení organizace prohlašována tzv. „***zákaznická orientace***“.

Aby organizace mohla naplňovat svou primární funkci, musí konat. Obecnou abstrakcí veškerého konání organizace je soustava jejích **podnikových procesů**. Procesy, odvozené přímo od primární funkce, pak jsou vpravdě ***esencí fungování organizace***.

Na základě dlouholetých zkušeností z projektů programu PARMA (Public Administration Reference Model & Architecture) [20], jenž se zabývá aplikací principů procesního řízení v oblasti veřejné správy, přesněji samosprávy, považujeme za hlavní kritické faktory úspěchu aplikace myšlenek procesního řízení ve veřejné správě následující skutečnosti:

1. **Primární funkce veřejné správy** (tedy hlavní „strategické“ cíle činnosti veřejné správy) je velmi **abstraktní** záležitostí. Jak velká je zde potřebná míra abstrakce, dobře ilustrují následujících typové otázky, které musí být pro identifikaci primární funkce bezpodmínečně zodpovězeny:
   - *Kdo je „zákazníkem“ služeb veřejné správy?* Jednoduchá odpověď, jež se zde primárně nabízí, zní: občan. To však neúnosně redukuje skutečnou množinu aktérů veřejné správy, z nichž každého jednoho je nutno ve specifickém smyslu považovat za zákazníka veřejných služeb, protože každý z těchto aktérů má vliv na rozvoj společnosti a je s ním tudíž nutná příslušná komunikace. Patří sem, kromě běžných občanů, také obec sama (jejíž vůli představuje zastupitelstvo v roli „kolektivního individua“ pro rozhodování obecních otázek), podnikatelé a firmy, působící v dané obci a nejrůznější formy dalších „aktérů“ v oblasti komunitního života, jako jsou nevládní organizace, občanské spolky apod.
   - *Jaké jsou základní potřeby „zákazníků“ v oblasti veřejné správy?* Základní potřeby aktérů obecního života nelze odvodit z legislativy, ani z popisu práce úředníků, jak bývá často, ze strany odpovědných příslušníků veřejné správy, uvažováno. Často v této oblasti existuje více vzájemně rozporných „potřeb“.
   - *Jak se tyto „potřeby zákazníků“ projevují?* Mnohé potřeby nejsou vyjádřeny ve formě „požadavků“, k jejich zjištění je nutno, systematicky analyzovat různé faktory situace. A často je k tomu také nutná přesná znalost obecného kontextu dané situace.
2. Oblast veřejné správy je silně svázána **právními předpisy**. Legislativa, jako typický artefakt, uměle vytvořené lidské dílo, z principu není dokonalá, úplná, ani vnitřně konsistentní. Odráží názory svých tvůrců a stav poznání v době svého vzniku, v principu nemůže být zárukou objektivní, na lidské vůli a možnostech nezávislé, pravdy. Navíc mechanismus, jímž veřejnosprávní legislativa vzniká a jenž odráží chvályhodnou snahu zohlednit všechny zainteresované strany, z téhož důvodu zcela přirozeně vede ke vnitřním nekonsistencím vytvářeného produktu (legislativy). K eliminaci těchto přirozených nekonsistencí obecně existují právní a legislativní nástroje pro postupné „ladění“ existujících předpisů na základě objevování vnitřních rozporů a nekonsistencí jejich používáním v praxi. Problém však je, že legislativa je ve veřejné správě tradičně považována za základ veškerého činění, prakticky za náhradu primární funkce. Za smysl práce úředníka se, namísto naplňování primární funkce veřejné správy co nejefektivnějším způsobem, tradičně považuje „vykonávat činnosti dle zákona“, což

dopředu vylučuje jakoukoliv odchylku od legislativou stanovených činností. Tato skutečnost činí tolik potřebnou analýzu kořenů strategických hodnot v této oblasti velmi obtížnou, zvláště když vezmeme v úvahu přirozený odpor proti změnám. Jakékoliv návrhy změn používané praxe, byť v duchu smysluplného „zrání“ legislativy, tak bývají ve veřejné správě typicky považovány za nezákonné a tudíž nežádoucí jednání. Čím větší důraz je ve veřejné správě na legislativní ukotvení činností, tím větší jsou stavěny bariéry potřebným změnám.

3. Důsledkem obou předcházejících faktorů je skutečnost, že **nejsou všeobecně přijaty a sdíleny základní strategické hodnoty komunity** a že existují silné mentální a legislativní překážky, které musí být při analýze primární funkce veřejné správy překonány.

Přitom definice primární funkce – jaké jsou **hlavní strategické cíle činnosti veřejné správy** – je, jak ukazuje úvodní kapitola tohoto článku, zásadní podmínkou změny koncepce řízení z tradičního na procesně orientované. Prvořadým úkolem při aplikaci myšlenek procesního řízení v oblasti veřejné správy je tedy **definice její primární funkce**. Definice základních principů pro identifikaci primární funkce veřejné správy byla primárním problémem k řešení ve výzkumném programu PARMA, popisovaném v následující kapitole.

2. Metody, principy a výstupy programu PARMA

Tato kapitola popisuje metodické principy programu PARMA (Public Administration Reference Model & Architecture) [20], zmíněném již v předchozí kapitole. Globálním cílem programu PARMA je **rozvoj obecného referenčního modelu** procesů a objektů v oblasti veřejné správy **neboli obsahové architektury veřejné správy**.

Program sestává z řady navazujících projektů, tzv. etap programu. Projekt každé etapy má plánovány specifické cíle, jimiž navazuje na etapy předchozí ve smyslu směřování k základnímu účelu programu – rozvoji modelu obsahové architektury veřejné správy. Součástí ukončení každé etapy je retrospekce získaných znalostí a naplánování dalšího postupu. Program je tak každou svou etapou upřesňován co do detailů dalšího postupu s tím, že základní účel zůstává neměnný.

Globální metodický **postup vývoje** modelu architektury v programu PARMA sestává z kroků:

1. **Analýza stavu činností veřejné správy** a základních pracovních postupů. V rámci této fáze programu, trvající čtyři první etapy, byly analyzovány základní činosti typového úřadu tzv. III. typu (tj. obce okresního formátu, obsahově srovnatelné s městskou částí statutárního města). Byly identifikovány základní logické řetězce činností – zárodky budoucích procesů a základní tzv. procesní oblasti, zprvu vycházející z jednotlivých agend a potažmo i organizační struktury úřadu.
2. **Analýza základních strategických hodnot** samosprávy, sestávající z paralelních kroků:
   - **analýza kritických faktorů** činností samosprávy s použitím techniky SWOT (Strengths, Weaknesses, Opportunities, Threats), jako zdroje základních strategických hodnot;
   - **návrh soustavy základních strategických hodnot a cílů** samosprávy na bázi zjištěných kritických faktorů, procesních oblastí a činností z kroku 1 a strukturované představy základních zdrojů životních událostí, jak vlastní, tak získanou studiem relevantních zdrojů (např. a zejména [10]).

   Výstupem tohoto kroku je model základních strategických hodnot samosprávy a jejich vzájemných vztahů, v programu nazvaný „strategie samosprávy“.
3. **Analýza hlavních objektů samosprávy** s použitím techniky konceptuálního modelování a souvisejících analytických technik. Výstupy tohoto kroku jsou:
   - **globální konceptuální model samosprávy** obce, jako jedna ze dvou hlavních složek globálního modelu samosprávy („ontologie samosprávy“);
   - **model životních cyklů klíčových objektů**, jako důležité východisko následné verifikace obsahu navrhovaných procesů z hlediska obecných regulačních pravidel (tzv. „business rules“).
4. **Návrh a analýza klíčových procesů** na základě základních strategických hodnot z kroku 2 a jednotlivých odpovídajících životních událostí a jejich kontextu z kroku 3. Zjištěné základní klíčové procesy jsou dále analyzovány technikou normalizace procesů z metodiky MMABP (viz [21], [19])

a zjištěné podpůrné procesy pak dále zobecňovány do podoby tzv. „průřezových procesů“ a mapovány na relevantní technologie a standardy (např. na typovou funkčnost agendových informačních systémů – ERP apod.). Podpůrné procesy tak mají roli míst přirozeného zapojení technologické podpory do procesů samosprávy a také identifikačních míst vhodného outsourcingu činností. Klíčovým procesům pak v cílovém modelu náleží role modelu obsahové integrace infrastruktur (informačního a organizačního systému) a jsou tak základem k obsahové (funkční) architektuře tzv. eGovernmentu.

Celý postup je iterativní, kroky se v průběhu jednotlivých projektů opakují a navazují na sebe s cílem zapracovat nově zjištěná fakta z předchozích kroků.

Kromě výše zmíněného hlavního cílového výstupu – obecného referenčního modelu procesů a objektů – má program také řadu neméně důležitých dílčích a podpůrných výstupů, z nichž zasluhuje pozornost především zde popisovaná metodika, zahrnující 4 základní, vzájemně provázané principy a v rámci každého z nich specifické metody, postupy a techniky.

Jak bylo již zmíněno výše, primárním problémem k řešení, na němž závisel celý další postup programu PARMA, byla definice základních principů **pro identifikaci primární funkce veřejné správy.** Během prvních několika etap byly ujasněny následující čtyři základní **metodické principy:**

- **3 základní oblasti** života komunity, jako zdroje životních událostí (a potažmo strategických hodnot a procesů veřejné správy – viz poslední princip níže):
  - fyzické prostředí,
  - sociální prostření,
  - podnikatelské prostředí.
- **Životní události** jako soubor základních podnětů klíčových procesů.
- **Maslowova hierarchie lidských potřeb** jako obecný zdroj životních událostí.
- **Životní cykly klíčových objektů** jako obecný kontext životních událostí.

Tyto čtyři principy ve vzájemné součinnosti tvoří v použité metodice techniku pro odhalování všech podstatných faktorů veřejné správy, které následně umožňují formulaci základních klíčových procesů a všechny ostatní následné akce, nutné k realizaci procesní orientace v této oblasti. Podobně jako hlavní produkt programu – refernční model, tak i metodika se jednotlivými etapovými projekty postupně ověřuje a vyvíjí zohledňováním nově zjištěných faktů a zkušeností, jakož i výsledky ověření v praktických aplikacích u jednotlivých partnerů programu.

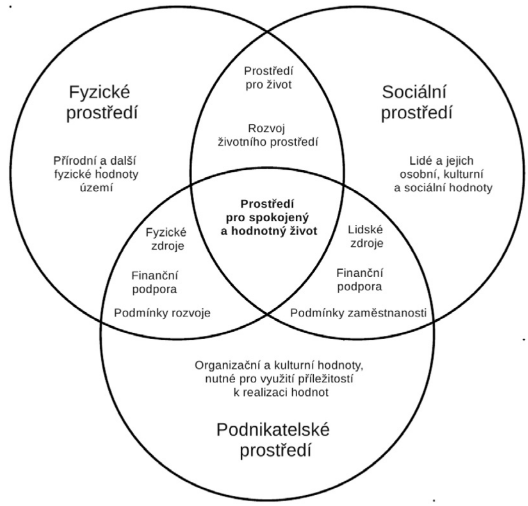
V následujícím textu je každému jednomu výše uvedenému principu věnována samostatná subkapitola. Tam, kde je to relevantní, vždy následují po podrobnějším vysvětlení principu ukázky konkrétních výstupů použití daného principu v programu PARMA. Pro celkový přehled výstupů tohoto rozsáhlého programu, přesahujících rozměr tohoto článku, viz jeho portál ([20]).

2.1 Tři základní oblasti životních událostí, strategických hodnot a procesů veřejné správy

Jak je zmíněno výše, třemi základními oblastmi, které jsou zdrojem klíčových životních událostí v oblasti samosprávy jsou (viz Obrázek 1):

- **Fyzické prostředí**, které představuje přírodní a další fyzické hodnoty daného území. Je tvořeno přírodními a fyzickými vlastnostmi území, jako jsou suroviny, příroda a její hodnoty pro rekreaci a cestovní ruch, a také infrastruktura a další hodnoty fyzického prostředí, jež jsou důležité pro lidi i pro jejich podnikání.
- **Sociální prostředí** sestávající z lidí a jejich osobních, kulturních a sociálních hodnot. Sociální prostředí zahrnuje nejen jednotlivé osobnostní charakteristiky lidí, ale i globální atributy společnosti samotné, často nazývané „kulturou“ společnosti.
- **Podnikatelské prostředí**, včetně organizačních a kulturních hodnot, potřebných pro realizaci příležitostí. Tato oblast zahrnuje všechny podnikatelské subjekty: podniky, podnikatele a jejich kvalitu, zaměstnance a jejich kvalifikaci, a k tomu také ovšem příslušnou legislativu a kvalitu služeb veřejné správy na podporu podnikání.

Obr. 1: Tři základní zdrojové oblasti životních událostí



Zdroj: [20]

Obrázek 1 ukazuje také dvoustranné průniky jednotlivých zdrojových oblastí a identifikuje základní smysl prvků jedné oblasti pro oblast druhou:

- Fyzické prostředí nabízí především životní prostředí pro lidi, což je jeho hlavní význam pro společnost (sociální prostředí).
- Kvalita lidí, jakož i samotné společnosti, spolu se základními kulturními hodnotami, jsou důležitým základem pro péči o životní prostředí a jeho rozvoji – to je hlavní hodnota sociálního prostředí z hlediska fyzického prostředí.
- Fyzické prostředí podporuje podnikatelské prostředí fyzickými zdroji: územím a jeho vlastnostmi (přírodními zdroji a dalšími vlastnostmi daného území, využitelnými k podnikání), jakož i vybavením, infrastrukturou, apod.
- Sociální prostředí podporuje podnikatelské prostředí lidskými zdroji: lidmi, jejich kvalifikací, tvořivostí, sociálními vlastnostmi atd.
- Podnikatelské prostředí podporuje jak fyzické, tak sociální prostředí finančně. Kromě toho dodává sociálnímu prostředí důležitý potenciál zaměstnanosti, jako důležitý nástroj k zajištění harmonického sociálního rozvoje. Fyzickému prostředí pak dává potenciál vývoje ve formě nabídky příslušných potřebných služeb.

Na obrázku je rovněž vidět, jak jsou všechny tři základní oblasti úzce provázány, každá jedna s oběma ostatními tak, že každá typová životní událost, pocházející z určité oblasti, má své důsledky ve všech ostatních oblastech. Společný průsečík všech tří oblastí pak představuje globální strategickou hodnotu společnosti: prostředí pro spokojený a hodnotný život.

Odpovídající výstupy programu PARMA

Na základě tohoto modelu základních oblastí života společnosti (komunity) byly identifikovány 3 základní oblasti strategických hodnot a cílů územní veřejné správy (samosprávy):

- podpora podnikání,
- sociální rozvoj,
- územní rozvoj.

Z těchto tří strategických oblastí působení veřejné správy pocházejí **základní identifikované klíčové procesy**, které tvoří základ celé procesní mapy veřejné správy. Z nich jsou pak odvozovány, analyzovány a zobecňovány nutné **podpůrné procesy**, jejich vazby na klíčové procesy a mezi sebou. Z těchto meziprocesních vazeb jsou následně odvozovány jednotlivé **potřebné služby**, jež jsou posléze použity jako racionální základ ke standardizaci služeb, která je nezbytným prvním krokem k využití technologie. A teprve v tomto bodě se dostáváme k oblasti e-Governmentu, teprve zde začíná být možné objektivně uvažovat smysluplnou podporu činností veřejné správy prostředky informačních technologií. Pro ilustraci konkrétního procesního obsahu jednotlivých oblastí následuje pro každou jednu oblast příklad jednoho representativního klíčového procesu se stručným vysvětlením jeho smyslu.

Tabulka 2 popisuje základní náležitosti jednoho z klíčových procesů oblasti podpory podnikání: *Pomoc s realizací podnikatelského záměru*.

Tab. 2: Příklad klíčového procesu oblasti Podnikatelské prostředí

Název procesu	Pomoc s realizací podnikatelského záměru
Zákazník procesu	Podnikatel
Cíl / účel procesu	Pomoci podnikateli realizovat podnikatelský záměr, a to tak, aby jeho uskutečnění bylo v souladu se strategickými a jinými zájmy obce s cílem dosažení harmonie v zájmech podnikatele a obce na principu win-win.
Cílový produkt	Úspěšně realizovaný podnikatelský záměr
Startovní životní událost	Podnikatelský záměr

Zdroj: [20]

Proces je startován na základě vzniku podnikatelského záměru. Má za cíl poskytnout podnikateli maximální součinnost při realizaci jeho záměru a současně zajistit soulad se strategickými a jinými zájmy obce, any byl realizován princip oboustranné výhodnosti (win-win). Zásadou win-win zde rozumíme základní princip obecně dobrého obchodu: dosažení situace, která je výhodná pro obě strany, podnikatele i obec. Jádrem tohoto procesu je tedy především důkladná analýza zájmů obou stran a následná modifikace záměru s cílem je jednak uvést do vzájemného souladu (tj. eliminovat možné negativní vlivy plánovaného podnikání na zájmy obce a zájmů obce na plánované podnikání), jednak dosáhnout synergického efektu (tj. získat přidanou hodnotu nad rámec samotného záměru). Přidaná hodnota, o niž tento proces usiluje, pochází ze souladu vzájemných zájmů podnikatele a obce. Z tohoto důvodu také nazýváme tento proces „pomocí s realizací“, zdůrazňujíce tím aktivní roli veřejné správy a nutný její pozitivní přístup k této věci, což v tradičním přístupu veřejné správy není obvyklé.

Tabulka 3 popisuje základní náležitosti jednoho z klíčových procesů oblasti sociálního rozvoje: *Řešení sociálního incidentu*.

Tab. 3: Příklad klíčového procesu oblasti Sociální prostředí

Název procesu	Řešení sociálního incidentu
Zákazník procesu	Občan
Cíl / účel procesu	Pomoci občanovi vyřešit problematickou sociální situaci (tzv. sociální incident), v níž se ocitl, a to tak, aby byly maximálně eliminovány možné negativní důsledky tohoto incidentu jak pro občana samotného, tak pro sociální prostředí obce.
Cílový produkt	Úspěšně vyřešený sociální incident
Startovní životní událost	Sociální incident / problém

Zdroj: [20]

Jedná se o obecný – generický business proces zahrnující mnoho konkrétních variant podle různých možných typů sociálního incidentu. Jednotlivé varianty tohoto procesu se liší v detailech postupu, odpovídajících specifikům řešení jednotlivých typů incidentu, generický proces pak vyjadřuje společné schema, společné části jejich postupu a společné akce (resp. potřebu podpůrných procesů).

Příklady jednotlivých typů sociálních incidentů jsou *hmotná nouze*, *drogové ohrožení v rodině*, *ztráta zaměstnání* apod. Z uvedených příkladů je zřejmé, že jednotlivé druhy sociálních incidentů vyžadují různé postupy řešení, liší se také v jednotlivých účastnících, souvislostech s jinými oblastmi a možnými událostmi, mají rozdílné metriky hodnocení úspěšnosti apod. Současně je z příkladů zjevná i vzájemná provázanost jednotlivých incidentů, jež je viditelná (a řešena) na úrovni generické podoby procesu. Například ztráta zaměstnání může vést (a bez aktivní pomoci často vede) ke hmotné nouzi, jež může úzce souviset s následným drogovým ohrožením v rodině. Tato souvislost však není jistá, záleží na okolnostech a mezi nimi zejména na konání veřejné správy, jejímž přičiněním mohou být mnohé negativní důsledky těchto souvislostí preventivně eliminovány. K tomu je ovšem důležitá komplexní představa o životních situacích a jejich souvislostech, a to jak v obecném smyslu (z životních cyklů objektů), tak ve specifickém smyslu jejich možného ovlivnění prostřednictvím procesů. Jednoduše řečeno je hlavní hodnotou, kterou procesně řízená veřejná správa v sociální oblasti přináší, především možnost nečekat pasivně až na negativní důsledky zřetězených událostí, ale účinně jim předcházet. Tento proces je toliko jedním z klíčových procesů oblasti Sociálního prostředí, jež zahrnuje, mimo jiné i například celou oblast sociální prevence. Právě v pojetí prevence v sociální oblasti se také výrazně projevuje výše zmíněná zralost systému veřejné správy.

Tabulka 4 popisuje základní náležitosti jednoho z klíčových procesů oblasti územního rozvoje: *Změna územního plánu*.

Změna územního plánu je tradiční, dobře známý a důkladně popsaný proces samosprávy. Jeho obsah i značná část struktury plyne především ze stavebního zákona, kde jsou dosti podrobně popisovány detaily a hlavní omezení tohoto procesu. Smyslem popisu tohoto procesu v rámci procesní specifikace samosprávy je, kromě dodržení předepsaného úředního postupu a všech stanovených omezení, především zohlednění všech navazujících životních událostí a průřezových souvislostí s ostatními oblastmi – sociální i fyzickou. Právě množství a složitost vztahů s jinými oblastmi, jejichž domyšlení je při intuitivním postupu velmi komplikované a nejisté, bývá častou příčinou chyb a z toho plynoucích následných incidentů v oblasti územního rozvoje.

Tab. 4: Příklad klíčového procesu oblasti Fyzické prostředí

Název procesu	Změna územního plánu
Zákazník procesu	Obec (komunita)
Cíl / účel procesu	Vytvořit novou verzi územního plánu obce, která vyhoví strategickému záměru rozvoje území obce a současně zohlední požadavky všech individuálních účastníků – žadatelů.
Cílový produkt	Nová platná verze Územního plánu
Startovní životní událost	Nastal termín pravidelné aktualizace Územního plánu (periodická událost) nebo Bylo naplněno kritické množství požadavků na změnu Územního plánu (ad hoc událost) anebo Mimořádná událost, nutně vyžadující změnu Územního plánu (ad hoc událost)

Zdroj: [20]

2.2 Životní události

Základní prvkem primární funkce organizace, jejím počátečním bodem, jenž je esencí jejího obsahu, je v teorii procesního řízení tzv. **klíčová událost**. Klíčovou událostí se rozumí typová reálná událost, charakterizující **potřebu zákazníka**. Pro identifikaci **primární funkce veřejné správy** tedy v programu PARMA logicky vycházíme z klíčových událostí, ve veřejné správě známých jako „***životní události***“, nebo také „*životní situace*“ (Life Events, Life Situations, Situations in Life).

Koncepce životních událostí (situací) je v posledních desetiletích, charakteristických změnou pohledu na fungování veřejné správy, často používaná a stala se také jedním ze základů současného evropského přístupu k pojetí e-Governmentu, známým jako Smart Administration, kde tvoří jeden ze tří základních pilířů: vedle principů Web 2.0 (jímž se rozumí interaktivní přístup k webové komunikaci včetně fenoménu tzv. „*sociálních sítí*“) a Gov 2.0 (jímž se euromarketingově označuje specifická aplikace principů Web 2.0 v oblasti veřejné správy a e-Governmentu) [4].

Pojem „*životní události*“ je přitom, jak je i z předchozího textu jasně vidět, v úzké souvislosti s procesně orientovaným pohledem na veřejnou správu. Tento přístup představuje přirozený pohled na činnost veřejné správy. Tyto

„přirozené potřeby“ činnosti veřejné správy jsou vždy dány situací v životě „zákazníka“ veřejné správy (tedy občana, podnikatele, spolku,...). A životní situace občana je, ve své podstatě, velmi blízko k hlavnímu cíli a objektivnímu důvodu k činnosti veřejné správy. Je zřejmé, že takový názor má velmi mnoho společného s hlavním principem reengineeringu podnikových procesů – organizace činností podle hlavních cílů, které musí být přímo propojeny s přirozenými strategickými cíli organizace a, v přímém důsledku toho, vždy v návaznosti na potřeby „zákazníků“. Uvažování v životních událostech vede orgán veřejné správy k tomu, aby **primárně** myslel na **potřeby klientů**, což je ovšem velký kulturní rozdíl oproti tradičnímu agendovému způsobu výkonu veřejné správy.

Aplikace tohoto pohledu na fungování veřejné správy jsou v různých zemích na velmi různé úrovni a zjevně úzce souvisí s kulturou dané země, s převažujícím přístupem k problematice veřejné správy a komunitního života a potažmo s historickými souvislostmi. Průzkum použití tohoto přístupu, opakovaně v programu PARMA prováděný, ukazuje, že nejdále byly tyto myšlenky prakticky dovedeny v Austrálii [1] a na Novém Zélandě [15], kde jsou integrální součástí státní koncepce architektury veřejné správy. Zdrojem, jenž je pojetí PARMA nejblíže a nejvíce z něj bylo v jeho projektech čerpáno, je ale britský projekt LEAP (Life Events Access Project) londýnské samosprávné čtvrti Lewisham [10], jenž dodnes jako jediný vnímá jednotlivé životní událost ve vzájemném kontextu, daném životním cyklem příslušného objektu (v projektu LEAP konkrétně člověka v různých rolích: občana, spotřebitele, zákazníka, podnikatele, plátce daně,...) a v přímé souvislosti s příslušnými business procesy veřejné správy. V evropském kontextu, přes několik výjimečných přístupů, jako ve zmíněné Velké Británii, či Dánsku (viz [13]), je celoevropská, resp. eurounijní koncepce životních událostí ([4]) pojata víceméně jen jako formální součást tzv. eGovernmentu, či Smart Administration (viz výše), bez současného respektování důležitých souvislostí kontextových a procesních. V České republice je pak základním zdrojem oficiálního pojetí životních událostí Portál veřejné správy [17]. To, co je zde nazýváno životními událostmi (situacemi), se nijak podstatě neliší od tradičního seznamu úředních agend, opatřených rozsáhlými citacemi příslušných legislativních dokumentů, čemuž ostatně odpovídá i tam uvedená definice: „*Životní situace jsou strukturované popisy řešení úkonů ve vztahu k orgánům veřejné moci*“ [17]. V tomto pojetí již není ani stopa po původní myšlence, stojící u zrodu tohoto pojetí: *zákaznicky orientované veřejné správy*, vpravdě jde jen o nicneříkající nový název tradičního pojetí.

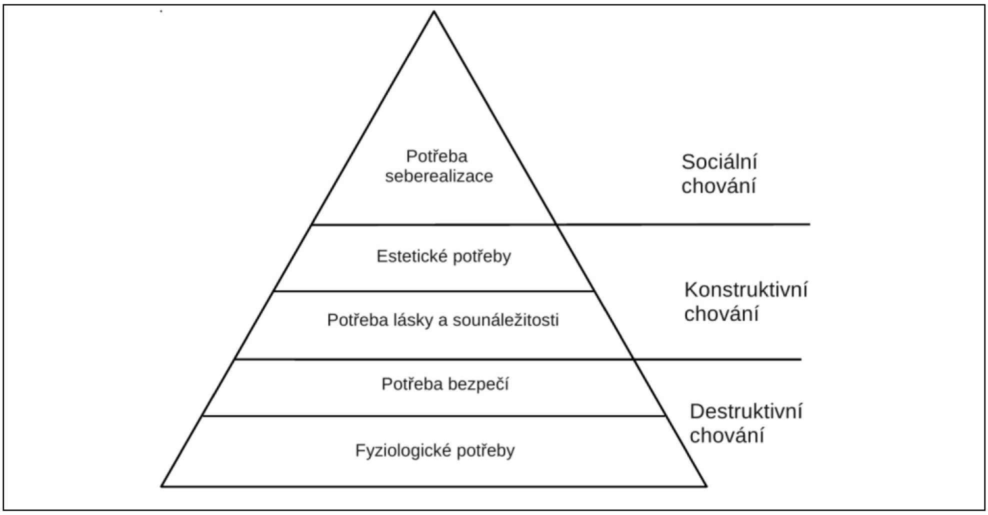
Výše zmíněnou souvislost chápání tohoto pojmu s kulturou dané země je také dobře vidět v tom, jaké konkrétní životní situace příslušný standard uvádí. Ve zralejších přístupech (VB, Dánsko, Austrálie, NZ) se v pojetí životních událostí přímo odráží vědomí základních strategických hodnot veřejné správy a také vědomí potřebné změny přístupu k jejímu výkonu, v zásadě odpovídající idejím procesního řízení. Naopak, pojetí životních událostí u zemí bez tohoto „kulturního zázemí“ jasně usvědčuje z principiální neexistence vědomí potřeby takové změny a pojem eGovernment tím redukuje téměř toliko na technickou výbavu úřadů, bez jakékoliv souvislosti se způsobem výkonu veřejné správy. Ostatně typická argumentace principiální neměnností veřejnosprávních praktik odvoláním na legislativu, diskutovaná v kapitole *Možnosti aplikace procesního řízení ve veřejné správě*, je nejpřesvědčivějším dokladem tohoto nevědomí. Tato kulturní souvislost je ovšem důležitým projevem, potvrzením platnosti zralostního pojetí vývoje organizace v širším – komunitním, či společenském – měřítku, jak je podrobněji diskutováno v závěru tohoto článku.

2.3 Maslowova hierarchie potřeb jako zdroj životních událostí

Kapitola 2.1 mapuje 3 základní oblasti působení veřejné správy a ilustruje jejich obsah příklady klíčových procesů veřejné správy v jednotlivých oblastech. Pro identifikaci potřeby jednotlivých procesů byla použita představa životních událostí (situací), jež vyžadují řešení, tedy příslušnou reakci veřejné správy (viz kapitolu 2.2). Jakmile jsou známy životní události, jejich okolnosti a souvislosti s jinými událostmi, jejich dopady, je možné uvažovat postupy jejich řešení – procesy a jejich souvislosti a ty dále rozpracovávat až do úrovně standardní struktury služeb a jejich případné technologické podpory, čímž vznikne objektivní představa struktury, na niž lze následně stavět podpůrnou technologii ve smyslu idejí e-Governmentu.

Objektivní správnost takové struktury je základem pro kvalitu takového pojetí aplikace informačních technologií ve veřejné správě a potažmo i zárukou smysluplnosti, efektivnosti a efektivity těchto nemalých investic. Nicméně základním problémem, jenž je na samém začátku třeba vyřešit je otázka: **jak identifikovat objektivně platné obecné / typové životní události?** Jako ideový teoretický základ, pro zaručení objektivnosti identifikovaných životních situací, byla v programu PARMA použita **Maslowova teorie hierarchie lidských potřeb**.

Obr. 2: Maslowova hierarchie lidských potřeb a hranice základních typů chování



Zdroj: [20] na základě práce A. Maslowa [12], [11]

Myšlenka hierarchie lidských potřeb, původně formulovaná v [12] a dále rozpracovaná v [11], bývá interpretována mnoha autory většinou ve formě pyramidy (viz Obrázek 2). Maslow vystavěl svou teorii na základním přesvědčení, že chování lidí je motivováno hlavně uspokojování jejich potřeb. Typické lidské potřeby jsou přitom hierarchicky vzájemně závislé, tedy „vyšší“ potřeby je možno uspokojit až po uspokojení potřeb z nižších úrovní. Lidskou mysl přitom pojímá jako komplex mnoha paralelních duševních procesů, probíhajících zároveň. Chování každého jedince je tedy v daném okamžiku motivováno mnoha paralelními vlivy. Jeden z těchto motivů vždy dominuje ostatním, přičemž tato dominance vždy závisí na konkrétním čase (v jiném čase může být motivace ve stejné situaci jiná). Maslow říká, že „lidský organismus je dominován“ určitými potřebami, spíše než že by jedinec byl „zaměřen v daném okamžiku pouze na určité potřeby“ [11].

Program PARMA staví na přesvědčení, že takovéto pojetí lidské motivace by mělo být tím pravým základem pro analýzu základních potřeb občanů s cílem odhalit hlavní kořeny jednání veřejné správy – její „primární funkci“. **Komunita (společnost) je vždy složena z jednotlivců, tedy jakýkoliv pohyb v komunitě má vždy své kořeny v motivaci individua.**

V hierarchické soustavě typů lidských potřeb jsme identifikovali tři základní typy chování člověka:

- k naplňování potřeb dvou nejnižších úrovní (fyziologické potřeby a potřeba bezpečí) dochází typicky destruktivním způsobem (obrana, boj, zneškodnění apod.). Tuto oblast nazýváme *oblastí destruktivního chování*;
- k naplňování potřeb dvou středních úrovní (láska, sounáležitost a estetické potřeby) dochází typicky konstruktivním způsobem (budování, tvorba apod.). Tuto oblast nazýváme *oblastí konstruktivního chování*;

- činnosti naplňování potřeb nejvyšší úrovně jsou pak především obráceny mimo subjekt a jeho osobní okolí, ke společnosti jako celku, v duchu naplňování těchto potřeb se člověk „obětuje“ společnosti, význam jeho činění je společenský. Tuto oblast nazýváme *oblastí společenského chování*.

Jednotlivé úrovně typů chování z tohoto modelu jsou zdrojem možných incidentů – životních událostí – které hrají důležitou roli v životě obce a jejím vývoji. V tomto pojetí představují životní události základní prvek komunitního chování, a tím i základní podněty k tomu odpovídajícím akcím veřejné správy. Z pohledu rozvoje komunity je třeba některé z těchto událostí podporovat, některé účinky některých eliminovat, nebo jim dokonce preventivně zabránit, a to podle konkrétního významu těchto problémů. Význam každé životní události pro komunitu a její rozvoj především vyplývá z typu chování subjektu, kterému událost patří – z konkrétní maslowské úrovně potřeb, jež je v jednání příslušného subjektu v dané situaci dominantní.

Odpovídající výstupy programu PARMA

V praxi nás výše uvedená aplikace teorie A. Maslowa dovedla k identifikaci hlavních oblastí činností veřejné správy podle obecného místa původu typových životních událostí:

- **Pod hranicí mezi destruktivním a konstruktivním chováním** by veřejná správa měla:
  - podporovat lidi a rodiny v hmotné nouzi, nebo ohrožené sociální exkluzí, s cílem prevence sociálních incidentů a tím i potenciálního destruktivního chování, jež obecně ohrožují společnost;
  - věnovat zvláštní péči dětem z rodin v hmotné nouzi, nebo ohrožené sociální exkluzí, s cílem zabránit možnému nežádoucímu vývoji jejich životů.
- **Nad hranicí mezi destruktivním a konstruktivním chováním** je úkolem veřejné správy:
  - podporovat (či mu alespoň nebránit) konstruktivní chování občanů a využívat je pro rozvoj sociálních a kulturních hodnot společnosti;
  - podporovat neustálé uspokojování potřeb dětí v oblasti vzdělávání, kultury, a možnosti jejich seberealizace.
- **Nad hranicí mezi konstruktivním a sociálním chováním** vycházíme z přesvědčení, že základem každého (z obecního hlediska smysluplného) podnikání jsou vždy potřeby zákazníků. Primární funkcí podnikatelských aktivit lidí je tedy naplňování potřeb těch druhých. Z této skutečnosti plyne, že v této oblasti životních situací je potřeba řídit, či alespoň ovlivňovat rozvoj podnikatelského prostředí s cílem:
  - podporovat rozvoj podnikání jako základní potřeby podnikatelů a tvůrčích lidí;
  - sledovat podnikatelskou kulturu s cílem:
    - zajistit, že podnikání primárně sleduje potřeby zákazníků namísto pouhého zisku;
    - snížení poptávky po destruktivních statcích eliminací jejich nabídky.

Je zřejmé, že naplnění těchto úkolů nutně vyžaduje myšlení v širších souvislostech. Jednotlivé akce k naplňování těchto úkolů mají důsledky obvykle ve všech třech výše zmíněných oblastech života společnosti, protože všechny oblasti jsou vzájemně kontextově propojeny. Navíc je zde kriticky důležitý i časový kontext. Příslušný orgán veřejné správy musí nutně znát kauzalitu prováděných akcí, jež plyne z jejich vzájemného propojení. Nejlepší formou popisu kauzality akcí, ve smyslu optimální a současně dostatečně přesné, je popis *„životních cyklů objektů“*, popisovaných v následující kapitole.

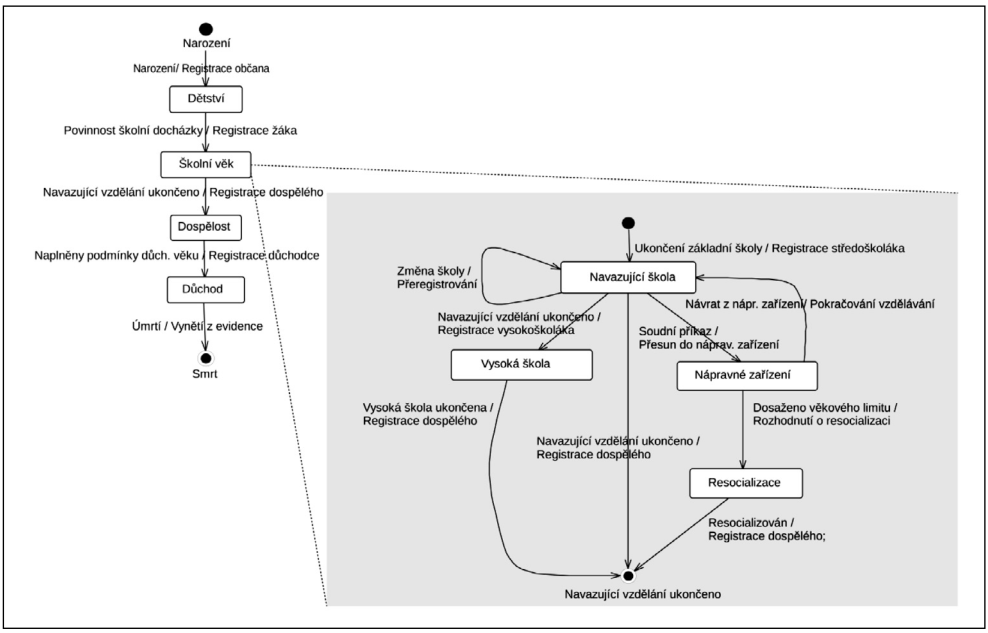
2.4 Životní cykly objektů

Obrázek 3 ukazuje zjednodušený příklad životního cyklu třídy objektů Občan, jako jednoho z klíčových objektů veřejné správy, identifikovaných v programu PARMA. K popisu životního cyklu je zde použit Diagram stavů (State Chart), jenž je součástí všeobecně přijatého standardu pro analýzu a modelování – jazyka UML (Unified Modeling Language) [22]. Jazyk UML, ačkoliv byl vyvinut v kontextu metodik vývoje informačního systému a je v současnosti je stále převážně používán pro potřebu vývoje počítačových aplikací, byl původně vytvořen a je rozvíjen především jako standardní umělý jazyk pro modelování obecně. V programu PARMA je jazyk UML použit pro potřebu specifikace analytických modelů, usilujících o postižení „ontologické podstaty“ veřejné správy pomocí tzv. „konceptuálního modelu“. Metodicky přitom vycházíme ze základního pojetí konceptuálního modelování, rozšířeného o popis přirozené dynamiky objektů v podobě tzv. „životních cyklů“. Jak je i teoreticky prokázáno ([9], [6]), zkoumání dynamiky objektů je důležitým faktorem dosažení potřebné komplexnosti ontologického poznání. Navíc, v metodice [19], tvořící metodický základ programu PARMA v oblasti modelování, je dynamika objektů základním zdrojem kritických omezení, jejichž poznání je nutné pro exaktní specifikaci procesů. Diagram stavů zde tedy slouží k popisu základních obecných zákonitostí, vázaných k existenci příslušného objektu, jež jsou z hlediska smyslu popisovaného objektu důležité. Jde o exaktní formu popisu základních omezení, jež se, z hlediska času, váží k příslušnému objektu, mají objektivní povahu, a tudíž musí být nutně respektována všemi činnostmi a procesy, které se daného objektu týkají.

Odpovídající výstupy programu PARMA
Diagram na Obrázku 3 popisuje základní náležitosti životního cyklu objektu třídy Občan. Ukazuje čtyři základní stavy „života občana", jež jsou z hlediska veřejné správy důležité (Jako veškeré modely, i model životního cyklu je vždy zjednodušeným viděním nekonečně komplexní reality, obsahuje pouze ty stavy objektu, jež jsou důležité z hlediska momentálního účelu modelování. Ten je zde vymezen navazujícími akcemi, především popisem procesů veřejné správy, tedy ze všeho, co by mohlo být možné na obecném Občanovi zkoumat, nás zde zajímá jen to, čeho se bezprostředně týkají příslušné činnosti a procesy veřejné správy. V tomto příkladu uvedený model je navíc ještě zjednodušený i oproti své plné verzi v projektu PARMA, pouze aby ilustroval smysl takového popisu.), základní čtyři etapy života: dětství, školní věk, dospělost a důchod. Život začíná událostí *narození* a končí stavem *smrt*. Smrt je zde pojata symbolicky, pro místní veřejnou správu bude jistým druhem „smrti" občana i třeba přestěhování do jiné obce.

Každý přechod mezi konkrétními stavy je popsán dvěma základními údaji: událostí, jež změnu stavu aktivuje a akcí, jíž je přechod do nového stavu uskutečněn. Událost představuje důvod, *proč* ke změně stavu dochází a akce představuje konkrétní čin, jako reakci na důvod ke změně stavu, tedy *jak* ke změně dojde. Tedy například stav *Dětství* končí událostí *Povinnost školní docházky*, jíž současně začíná stav *Školní věk*. Akcí, odpovídající této změně stavu v životě občana, je „*Registrace žáka*".

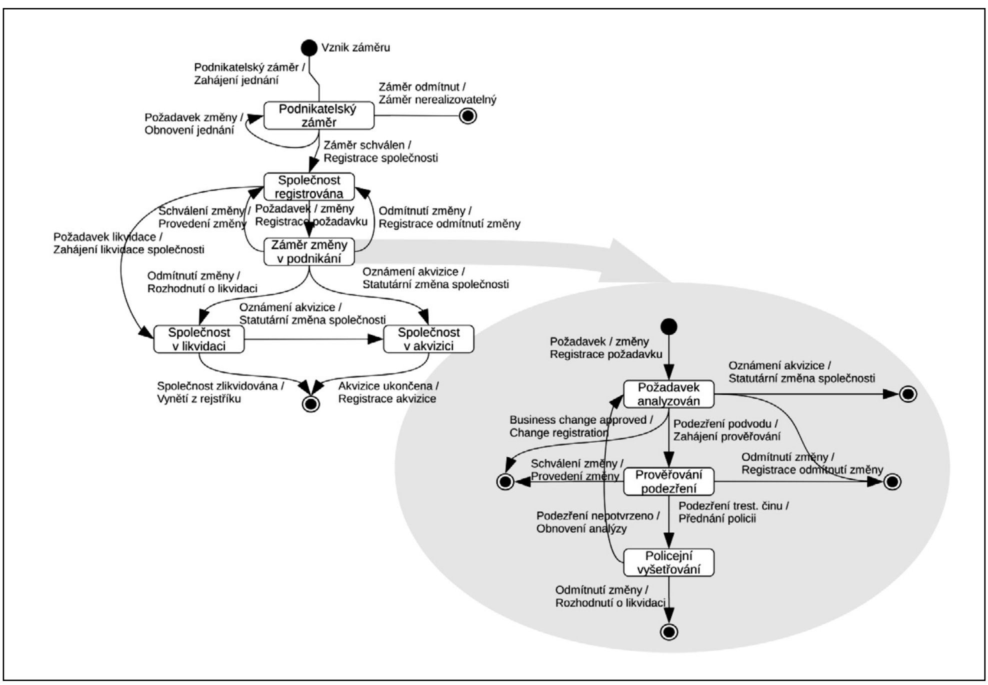
Obr. 3: Životní cyklus třídy objektů Občan



Zdroj: [20]

Diagram stavů je v metodice důležitým nástrojem, sloužícím k propojení klíčových prvků popisovaného „businessu“. Každá akce v přechodu mezi stavy objektu musí odpovídat akci v některém z popsaných business procesů. Každá událost v procesu tak odpovídá nějaké životní události ve smyslu, jak je uvedeno výše. V případě příkladu na Obrázku 3 to například znamená, že v příslušné samosprávě musí existovat nějaký business proces, v němž figuruje akce registrace žáka (například zápisy žáků do povinné školní docházky), kde se tato akce vyskytuje v příslušném kontextu. Totéž platí pro další, v modelech životního cyklu popsané akce: registrace dospělého, důchodce, vysokoškoláka, rozhodnutí o resocializaci a další. Toto principiální provázání modelů životů objektů s modely business procesů má hluboký metodický význam: slouží jako generátor podnětů k dosažení úplnosti popisů. Objevení potřeby nějaké akce při popisu životního cyklu dotčeného objektu může způsobit poznání potřeby příslušné akce v nějakém procesu (a třeba změnit dosavadní představu o procesu), či dokonce objevení procesu nového. A naopak: existence akce v procesu vede k potřebě prozkoumat i její obecné souvislosti z hlediska dotčeného objektu (a bez ohledu na procesy). Tedy například registraci dospělého (při ukončení školní docházky a předpokladu nástupu do zaměstnání) je třeba provádět především proto, že je projevem jisté důležité situace v životě občana, již třeba sledovat, neboť se může typově vázat na jiné situace, pro veřejnou správu důležité (zde například sociální incidenty (nezaměstnanost)), a nikoliv pouze proto, že to má úředník v popisu práce. Toto je jeden ze způsobů, jimiž metodika pomáhá objektivizaci koncipovaných činností a procesů veřejné správy a jejich neustálému provázání, prostřednictvím životních událostí a oblastí jejich původu, se základními strategickými hodnotami veřejné správy. Jinými slovy u všeho, co podle těchto modelů řízená veřejná správa činí, je takto možné nejjednodušším možným způsobem dohledat vazbu na obecnou strategii veřejné správy, resp. obce, společnosti.

Obr. 4: Životní cyklus třídy objektů Společnost



Zdroj: [20]

Obrázek 4 doplňuje předchozí model modelem životního cyklu objektu společnosti. Specifikuje, z hlediska obce důležité, základní fáze existence společnosti: *Podnikatelský záměr*, *Registrována*, *Záměr změny* a dva alternativní terminální stavy *V likvidaci* a *V akvizici*. Společnost začíná v tomto pojetí pro veřejnou správu existovat již ve stadiu realizace podnikatelského záměru, tedy ještě před její registrací. Důvodem je skutečnost, že jedním z důležitých procesů samosprávy je i výše zmíněný proces Pomoc s realizací podnikatelského záměru, jenž se týká právě tohoto stavu objektu Společnost. Na rozdíl od Občana je životní cyklus Společnosti navíc poněkud složitější, je v něm vidět možnost opakovaného návratu do stavu záměru, při složitějších okolnostech realizace záměru, možné cyklické střídání stavů Registrována a Záměr změny, jakož i možnost řešení nucené likvidace akvizicí.

Z obou příkladů je též možno tušit, že oba objekty, Občan i Společnost, mají některé společné průsečíky v podobě společných akcí, které odpovídají obecným asociacím mezi těmito dvěma třídami objektů modelovaných v navazujícím diagramu tříd, jenž popisuje kontext existence objektů a jejich vzájemné vztahy. Standardně lze předpokládat například vztahy typu *Občan je vlastníkem společnosti* a *Občan je zaměstnancem společnosti*. Momenty vzniku, zániku a případné změny těchto vazeb tak vždy znamenají vzájemné protnutí obou životních cyklů v jednom konkrétním okamžiku. Pro detailní namapování akcí by bylo zapotřebí většího detailu obou modelů, přesto je už z těchto modelů zjevné, že zde existuje řada objektivně platných pravidel a omezení, jež může tato soustava modelů explicitně vyjadřovat: některé stavy jednoho objektu předpokládají některé stavy druhého objektu a některé naopak vylučují. Například standardním stavem občana jako zakladatele i zaměstnance společnosti bude stav dospělosti, nicméně i kombinace s některými jinými stavy je možná, ovšem za specifických podmínek. Naopak existuje omezení možnosti zakládat společnost při pobytu v nápravném zařízení apod. Veškeré takové kombinace a k nim vázané podmínky a omezení jsou důležitými fakty, s nimiž veřejná správa musí pracovat a mít tudíž o nich přehled. Veškeré procesy veřejné správy pak musí být s těmito pravidly konsistentní.

Aplikace výstupů a závěry

Výstupy programu PARMA byly v projektech téměř všech etap, až na malé výjimky na úplném počátku, kdy se především formovaly základní metodické principy, průběžně ověřovány jejich praktickými aplikacemi. Konkrétně byly v historii programu partnery obce Černošice, Praha 2, Praha 10, Vodňany, Kladno, Milevsko a Děčín. Zapojení jednotlivých partnerů bylo různé, rozsah a obsah jejich účasti jsou dány jednak etapami, v nichž se programu zúčastnili, jednak i svou povahou, od aktivní analytické spolupráce, přes aplikaci některých výstupů projektu, až po lehčí formy spolupráce, konsultace apod. Kromě toho byly problematika a výstupy programu opakovaně konsultovány na pracovních seminářích na půdě Svazu měst a obcí ČR, Magistrátu hl. m. Prahy a posledně i Združení miest a obcí Slovenska. Nejsilnější spolupráce probíhala s obcemi Černošice, Praha 10 a Děčín, jejichž zástupci byli přímo aktivními členy projektových týmů. Nejpokročilejší spolupráce stále probíhá, a to s Magistrátem města Děčín v projektu „Zavedení procesního řízení“ v rámci projektu Úřad otevřený veřejnosti z dotačního programu OP LZZ, jenž směřuje k aplikaci pojetí klíčových procesů z oblastí podpory podnikání (pomoc s podnikatelským záměrem) a sociálního rozvoje (řešené sociálního incident). Zkušenost s těmito procesy, kterou organizace v projektu získá, včetně prvotního nepochopení, jako nutného evolučního předpokladu následného přijetí nových myšlenek, je tedy v tomto projektu očekávána jako hlavní hodnota, jež umožní následné pokračování evolučního procesu *zavedení procesního řízení* v samosprávě města.

Základním poznatkem z dnes již desetileté zkušenosti z programu PARMA je vědomí ohromné komplextity problematiky procesního řízení, zvláště pak ve veřejné správě, způsobené jak novostí oproti tradičnímu pojetí managementu, tak především šíří důsledků: jedná se o komplexní změnu, zahrnující doslova všechny oblasti života samosprávy. Mimo jiné to znamená, že nemá smysl usilovat o rychlé a účinné provedení takové změny, jež vyústí v okamžité užívání jejích efektů. To je nemožné, takovou změnu nelze provést jednorázově, ani jednosměrně (tj. manažerským rozhodnutím, příkazem), neboť jejími spoluaktéry musí být všichni aktéři veřejné správy, a to doslova. Jedná se o změnu evoluční, jejíž tempo neurčuje násilí manažéra, ale objektivní, evoluční okolnosti, zejména pak způsob myšlení všech aktérů, porozumění myšlenkám procesního řízení a hlavně jejich aktivní přijetí. To vše je postaveno na nutných dílčích zkušenostech, a to nejen positivních, nutným prvkem zkušenosti je také bytostné – osobní poznání problémů a nutnosti jejich překonání.

Zkušenosti z aplikací modelů zralosti (viz zejména [7] a [23]) přesvědčivě ukazují, že procesní způsob řízení je vždy organizačně intimní záležitostí, vyžaduje **vlastní zkušenosti**, na nichž lze pak teprve stavět další rozvoj organizace. Nezbytnou integrální součástí rozvoje organizace je osobní rozvoj jejích lidí. Organizaci tedy rozhodně nelze rozvíjet zvenčí, dodávkami nových technologií a cizích myšlenek. To je největším rizikem dnes typických snah o vytvoření architektonického modelu veřejné správy, jenž bude povinně používán napříč veřejnou správou, nezávisle na lidech a konkrétních organizačních podmínkách, zkušenostech a znalostech. Výše diskutované zralostní zákonitosti vedou k závěru, že takovéto pokusy o standardizaci, ba přímo „automatizaci" veřejné správy na bázi legislativy, principiálně, z podstaty věci, nemohou vést k reálnému (ne jen formálnímu) úspěchu, přímo naopak, budou v důsledku nutně kontraproduktivní. Zrání organizace probíhá vždy evolučně, prostřednictvím postupné, na zkušenostech založené změny v myšlení a jednání aktérů. V tomto smyslu každý partner programu PARMA svým způsobem program nejen obohatil, ale hlavně byl programem sám obohacen. Tedy každý, byť sebemenší, úspěšný projekt použití výstupů tohoto programu, je právě v kontextu zrání dané organizace vždy kriticky důležitý a z hlediska programu je považován za úspěch.

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Abstract

PROCESS BASED MANAGEMENT OF PUBLIC ADMINISTRATION

Václav Řepa

The article develops the idea of using the principles of business process-oriented management in public administration. Compared with the market-oriented organizations the area of public administration is more complex and abstract which makes the projects of process change in this field significantly complicated. On the other hand, the same characteristic creates the possibility to achieve significant benefits as also the „natural“ degree of inefficiency in the area of public administration is order of magnitude higher than it is in regular market-oriented firms.

The article introduces the long-term program consisting of a series of real analytical projects in this area. Basic principles of the approach as well as starting points of the methodology are explained. Four original principles are discussed in detail: Three source areas of the community management, Life events as essential triggers of key processes, Hierarchy of human needs as a general source of life events, and Life cycles of key objects as their general context. Main relevant outputs of the program are presented in the form of examples of key processes from each of three basic areas of the community management: physical, social, and economic environment. Each key process is discussed in terms of its main value as well as the substantial change which it brings in comparison with the current state.

Extensive experience from the program is discussed, and the idea that the process change in the area of public administration is the only way to the effectiveness and meaningfulness of any IT investment in this area, i.e. e-Government, is elaborated in conclusions.

Key Words: *Public administration, process management, enterprise architecture, e-government.*

JEL Classification: *M10.*

DOI: *10.15240/tul/001/2014-4-011*

DEPLOYMENT OF CLOUD COMPUTING IN SMALL AND MEDIUM SIZED ENTERPRISES IN THE CZECH REPUBLIC

Petra Marešová, Vítězslav Hálek

Introduction

Managers and owners of global and local companies are taking steps to ensure their positions in a changing competitive environment. These include efforts to estimate the future development and identifying significant trends. To watch and keep up with changes in Information Technology is particularly important because this industry can be considered as the most globally open and inter-connected with fast-moving trends.

Today the quality of life is determined by two basic dimensions, the objective dimension is closely connected with demographic and economic indicators, while the subjective dimension depends on the individual assessment of each person. Cloud computing is a cost-effective objective dimension, adaptable way to deliver business applications and services, to help to simplify the creation and management of hybrid cloud computing environments, to offer cloud-.based services we can use as a basis for supporting our workload needs and to share risk by limiting capital investments and allowing pay-per-usage policies [53].

Over the past fifty years or so, the deployment of information systems and information and communication technologies (ICT) has become one of the key factors of competitiveness, growth and productivity of current advanced economies. This is mainly due to the fact that ICT create high added value as well as helping to increase the efficiency and effectiveness of development, production, distributional business activities in virtually all sectors of the economy [17].

Therefore, a correct estimation of the future development of ICT in the context of business processes may provide faster access to information, new ways of communication and increase of employees' flexibility. There are a lot of predictions regarding the future development in the use of modern technology. Significant consultation and information-oriented companies such as Gartner, IDC (International Data Corporation), IEEE Computer Society, Accenture and others deal with these predictions. There are also many technologies to which they assign a great importance and potential for the future. The following list include those, which are common for most estimates of the above (and others) companies in the global and international level [1], [7], [10], [21], [54]:

- mobile technology,
- cloud services,
- shared data services,
- social networks,
- development of tools for processing large amounts of data,
- the connection between the Internet, cloud and mobile technologies.

Companies in the Czech Republic also tend to succeed in the competitive environment and seek to estimate the trends in information technologies for the following years. According to the company T-Systems Czech Republic [48], analytics of Businessworld.cz web [32], and based on the research in the Hradec Králové region [8], the key trends for the future of ICT in the Czech Republic include:

- dynamic network services and cloud,
- mobile technology and mobile commerce,
- virtualisation,
- IT security.

In the following text, the focus is on one of these trends – cloud computing. The aim of this paper is to analyse the possibilities and benefits of the use of cloud computing in Czech enterprises. The aim is also to compare the

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extent of its deployment in the environment of the Czech Republic, the European Union and also on a global level. Finally, the paper will be supplemented with selected information from the questionnaire survey, which was carried out among 200 Czech enterprises across all sectors of the CZ-NACE. The enterprises were interviewed about their knowledge of the technology, the extent of its use, and the possible interest in using it in the future.

1. Definition of Cloud Computing and Its Use in the Present

The fundamentals of cloud computing were laid by a computer scientist John McCarthy. In the sixties, he stated that in the future the computer technology could be organised as a public service, on the same principle as the share of electricity. He described cloud computing as a technology which is used by thousands to tens of thousands of customers, who connect to it remotely via the network. The next step in the evolution of cloud computing can be described as the year 1999, when the company Salesforce.com used its website in order to make their applications available to users. This solution was gradually applied by more and more companies. However, the rate of adoption of such ways of providing applications was not too high. The company Amazon also dealt with Cloud computing. This company did not like that it uses only 10% of its computing capacity and the rest is used only for cases of binge use (peak times). This resulted in the first commercial service of cloud computing – Amazon Web Services (AWS) in 2006. A year later, Google and IBM joined in and many universities began to work on scientific and commercial programs based on cloud computing. Since 2009, cloud computing has been perceived as a key future technology. It has been included among the most important technologies by the HP and Microsoft companies [14]. Interest of companies in cloud computing grew rapidly and by the end of 2009 the cloud market reached almost 45.6 billion CZK [19].

Currently there are a number of different views that differ primarily in strictness and accuracy with which they define the boundaries of the concept of cloud computing. One of the first properly formulated definitions originated in the academic environment at Berkeley University in California. According to Armbrust [4] cloud computing includes applications, which are in the form of services made available to users via a communication network and on the other hand it also includes all of the hardware and software tools that are used by data centres providing these services.

Forrester [20] Company extends the above definition by standardisation of IT means on the part of suppliers of services and self-service principles on the part of users. Cloud computing is essentially a set of standardised IT capabilities (services, software solutions or infrastructure) available through the internet on the basis of self-service principles and pay-per-use model. The standardisation particularly at hardware level is indicated by Marks and Lozano [37] as one of the prerequisites for the emergence of cloud computing.

The Gartner Agency suggests a somewhat more compact view of the addressed issue. The whole concept is based on the way of usage of information and communication technologies, where the scalable and elastic IT resources are delivered in the form of services to external users via the Internet technologies. Furthermore, it clearly defines the 5 main pillars of the whole concept [22]:

- *Principle of services* – the needs of consumers and providers are separated by a clearly defined interface that can be described as a service.
- *Scalability and elasticity* – a service performance can be progressively increased or decreased according to the actual needs of a consumer.
- *Sharing by multiple users* – IT resources are made available as a service that is shared by multiple consumers.
- *Measurement according to usage* – the use of the service is monitored on the basis of well-defined metrics, which in turn allows its pricing based on a variety of payment models.
- *The use of Internet technology* – the services are delivered to consumers via the Internet.

The above definitions usually consider cloud computing as a concept which already is established and successfully applied in practice. On the other hand, there has also been criticism of the concept. Larry Ellison, the CEO of Oracle Company, argued that the concept of cloud computing suits virtually any method of delivering IT services. Also for example Stallman (the founder of the free software movement) stands for the opinion that the whole concept is much more like a fashion trend than the actual technological progress in Information Technologies. IDC Company [30] in 2011, when the growth of cloud computing market was obvious, was more restrained in its criticism. IDC has stated that cloud computing is still relatively new, emerging trend of the development of IT services. It is not possible and to a certain degree it is not appropriate to tie it by a definitional framework which is too strict.

In the context of cloud computing it is essential to specify the possible deployment models and distribution models.

1.1 Deployment Model of Cloud Computing

The deployment model means the way cloud computing services are provided to end users. Similarly to the definition and development of this concept, in this area there are also some disputes. A comprehensive view, with whom a number of authors identify [34], [41], [50], is offered and proposed by the following deployment models.

Public cloud

The basic characteristic of the public model is to make cloud computing infrastructure available to the public or production companies. The service provider must be an external entity, as well as the data centres, from which the services are available [41]. In connection with this model the so-called virtual private cloud is also sometimes referred to. It is a solution that enables any organisation to create a set of separate IT resources in a public space. These resources are isolated from the group solely on the basis of the logical arrangement, not physically, so therefore virtual-private identification is used. However, the resources thus defined are accessible only to their landlord, who usually also has full control over them [31].

Private cloud

According to Mell and Grance [41], every model that make services available only to a single entity, can be marked as a private cloud. The entire infrastructure can be managed by a third party or an organisation itself. Armbrust [4] on the contrary, sees the essence of private solutions in internal data centres, which render their services only to its own organisation, and not to the public or other entities.

Community cloud

This is a model where the cloud infrastructure is shared between multiple organisations or groups of people who use it. These organisations can be connected by a security policy and the same field of interest [41].

Hybrid cloud

Hybrid cloud is a solution composed of multiple mutually disparate cloud computing solutions. A combination of public, private [31] or community model is usually considered.

What is offered within the service is explained by the distribution model. This is typically a software or hardware or combination thereof.

IaaS – Infrastructure as a Service – in this case, the service provider agrees to provide the infrastructure. Any problems with the hardware are taken care of by the provider, which is the main advantage of this approach. IaaS is suitable for those who own software (or their licence) and do not want to worry about the hardware. An example of IaaS is Amazon WS, Rackspace and Windows Azure.

PaaS – Platform as a Service – this service model offers complete a hardware and software platform, therefore, it is sometimes referred to as *cloudware*. PaaS service usually facilitates the creation of user interfaces, it includes the devices and services for application development with the possibility of design, development, testing, implementation and hosting [44]. Users of this service do not have to worry about investment and infrastructure for the development and the subsequent operation of their applications. Examples of PaaS providers are Google App Engine and Force.com (Salesforce.com).

SaaS – Software as a Service – the application is licensed as a service rented to a user. Users can therefore buy access to the application, but not the application itself. SaaS is ideal for those who only need normal application software and require access from anywhere and anytime. An example might be a set of applications Google Apps and Cargopass which is a system known in logistics.

2. The Use of Cloud Computing Today

In 2010, the largest market with cloud-based technologies was in the USA. European Union countries were in second place. This order is also expected to remain the same for 2014 [33] (Fig. 1). In all EU countries it is expected that the use of cloud computing will increase (Fig. 1). Development in the use of cloud computing in European Union countries is not as fast as for example in the USA. In terms of growth of different distribution models, according to the analyst company of Morgan Stanley Research, it is expected that the biggest growth will be in IaaS, i.e. 33% from 2011 to 2014. In the remaining two models the increase will be a few percent lower. The prediction used a variable of CAGR (Compounded Annual Growth Rate), which is a geometric mean of the predicted values. According to Ed Anderson, a specialist in the predictions of future development in cloud computing at the Gartner Company, the increase in total spending on this technology in the industry is expected to be more than 100% by 2016. Global spending should therefore reach 3,914 billion CZK. In contrast, the growth of the whole IT market is assumed to be by 3% [46].

In 2012, 4,000 PC users were approached across nine EU countries, they were asked about their knowledge and use of cloud computing [26]. This survey was realised by the Association Business Software Alliance (BSA), which brings together companies operating in the field of software. In the survey, it was found that although cloud computing is one of the most rapidly developing technologies, cloud services are used in the European Union by less than a quarter of computer users. The EU is therefore below the world average, which constitutes 34%. Most computer users also stated that they do not know about cloud technologies – 65% of the respondents have "never heard of it" or "only heard the name". The largest user acceptance (39%) were demonstrated in smaller European economies such as Greece and Romania. In contrast, the rate of adoption of cloud computing in the UK was 21%, in France 19% and 17% in Germany. This situation reflects the global trend of faster adoption of new technologies in emerging economies.

The low level of use of cloud computing in the EU corresponds to the situation in the Czech Republic. It is evidenced by the survey of the Aspectio Research Agency (September 2011), which was implemented in co-operation with Czech Google and the Association of Small and Medium-Sized Enterprises and Self-employed people of the Czech Republic (ASME of CZ). The survey was carried out among 345 respondents who were owners or managers of small and medium-sized companies, i.e. up to 250 employees, all over the Czech Republic in the sectors of: services, trade, agriculture and mining, institutions, manufacturing, science and research. It confirmed that the greatest obstacle to the use of new technologies in the cloud is the lack of information about what this term means [3].

- Nearly 70% of the survey respondents had not heard about cloud computing and only a quarter knew the correct meaning of the term.
- 16% of companies do not know the term “cloud computing”, but have already been using it without knowing.
- After clarification of the term, 40% of the entrepreneurs and companies involved in the research were interested in trying cloud computing.
- 92% of users of cloud applications from small and medium-sized enterprises are satisfied and especially appreciate the flexible access to information.

However, according to the latest forecast by IDC, the use of cloud in the Czech Republic is on the rise. Dynamics of growth will depend on a number of factors. We can mention for example the willingness of companies to adapt their IT processes, prices of licenses of providers and data security in the cloud [40]. On the basis of surveys conducted among EU countries, in the coming years it is expected that there will be an increase in the investments in cloud solutions. For example, a survey in the implementation of ERP systems shows that 14% of companies have implemented the system in cloud [19]. Half of the managers of large ICT companies believe (according to KPMG 2012) that cloud is a major technological driver of future changes and innovations in the industry. Within the public sector, 73% of the surveyed public sector representatives stated that mainly because of the savings for their organisation they should move to the cloud solutions. The biggest obstacle is concern about data security and the growing interest is in private cloud [35].

2.1 The Benefits of Cloud Computing

Many managers and owners of companies in the Republic for which cloud computing could be beneficial, do not know the possibilities of its use, or have not even heard of it (see the survey of Aspectio Research Agency). The frequently mentioned benefits include cost reduction of companies in the IT department, the possibility to flexibly change the requirements for services and access to data from anywhere. There are many more benefits (Table 1).

Tab. 1: Benefits and costs

Benefits	Authors
Reduced investment and operating costs	Armbrust et al. [4], Linthicum [34], Sarna [50], Marks and Lozano [37], Goncalves and Ballon [23], Velte et al. [55], Marston et al. [39], Hogan [26]
The use of network services and the Internet, the speed of implementation	Linthicum [34]
Innovative approach	Velte et al. [55], Sarna [50], Linthicum [34], Marks and Lozano [37], Goncalves and Ballon [23], Marston et al. [39], Hogan [27]
Environmentally friendly approach	Linthicum [29]
The lower number of IT staff or reduction of the cost of IT	Sarna [49], Marks and Lozano [37], Armbrust et al.[4], Rosenthal et al. [49], Goncalves and Ballon [23], Velte et al. [55], Marston et al. [39]
Elasticity and scalability	Armburst et al. [4], Rosenthal et al. [49], Marston et al. [23], Hogan [27]
Safety	Velte et al. [47]
Support for business processes	Marks and Lozano [36], Rosenthal et al. [49]
Faster access to the market	Goncalves and Ballon [23]
Shorter delivery time	Goncalves and Ballon [23]
Process automation	Velte et al. [55]
Current version of applications	Velte et al. [55], Marston et al. [39]
Energy Saving	Marston et al. [39]

Source: author

The use of cloud computing also brings some risks. ***Project risk*** is related to the mixing of technologies and scope of development makes implementation difficult to manage. Testing will not be done completely, and it will affect the quality and time of completion [5]. In Cloud Systems, some portion of applications run on the server side and some on the client side, therefore, ensuring the correct running or performing of application is unpredictable and difficult [2].

Access means that users can access data wherever and whenever they want. The vendors should provide connection in such a way that interruption and disconnection does not happen because cloud computing requires a reliable internet connection [42]. In fact most cloud providers prepare a redundant connection to prevent this problem and it is more likely to see a broken connection on the customer's side.

High availability is a key area of interest for organisations. Cloud applications are delivered without delay, especially when travelling over latency-sensitive connections, users can become frustrated waiting for "available" resources.

The aforementioned risks are coincided by many experts, which can be seen in the following table (Table 2).

Tab. 2: Risks of cloud computing

Project risk	Azarnik et al. [6], NISA [43], Chen et al. [28], Chou et al. [29], Bisong and Rahman [9]
Availability	Grimes [24], NISA [43], Peyiu and Dong [45]
Access	Shayan et al. [52], Azarnik et al. [6], Grimes [24], Queensland Government [47]

Source: author

The basic criterion for decision-making regarding which application shall be kept internally and which shall be moved to cloud, is the nature of the data that are maintained within the application. According to some opinions, critical data and functions should preferable be left within the company.

3. Survey of Cloud Computing Use in Czech Enterprises

In August 2013, a questionnaire survey on "ICT usage in enterprises in the Czech Republic" was carried out. This survey aimed to map the current attitudes of enterprises towards the use of technologies to support financial management, customer relationship management (CRM) and cloud computing. The survey was conducted in co-operation with the University of Hradec Králové and consulting firm Datank, s.r.o., which carried out the data collection. Companies in the Czech Republic across all sectors of CZ NACE Rev.2 with a focus on small and medium-sized enterprises, were addressed. The questionnaires were placed on the website and the respondents who belong to a panel of co-operating enterprises of the consulting firm Datank, s.r.o., were approached via email. Overall 208 completed questionnaires were ensured. As respondents were approached managers and CEOs and IT department Executives.

The questions from the questionnaire survey were divided into four major areas. Three areas correspond to the three above-mentioned technologies (CRM, cloud computing and technologies for financial management), the last group of questions were aimed at evaluating the efficiency of business processes in relation to the technologies used by the company. Part of the questionnaire in each field was an explanation of the basic concepts (cloud computing, types of distribution models: PaaS, SaaS, IaaS, deployment models: public and private cloud).

The structure of questions for each technology were similar, namely cloud computing was related to these questions.

- Are you planning to implement (possibly When did you Implement) cloud computing?
- What deployment model of cloud service do you use/consider using?
- What distribution model do you use?
- Which of the following cloud services do you use/consider using?
- What are the benefits of cloud computing for your company?
- Can you please describe the major obstacles to the introduction of cloud computing?

The respondents could choose from several options, some of the questions offered a rating for each of the options on a scale of 1–4.

The second set of questions was concerning the financial management of a company. The main aim was to find out what financial indicators are used by companies in relation to information technologies.

- What initial investment costs are acceptable, according to you, for the introduction of specific information technology in your company?
- What method of performance evaluation do you use or plan to use in your company?
- What evaluation method do you think is suitable for assessing the performance of the information system?

The last group consisted of identifying questions.

3.1 Characteristics of the Respondents

In terms of business type relationships, the survey was participated by 56.3% of companies of the type B2B (Business to Business), i.e. business relationships and interactions between two companies. Furthermore, the most represented companies were in the type of B2C (Business to Customer) and a combination of these two types (Table 3).

Tab. 3:	Structure of the respondents by type of business relationship
Type of relationship	
B2A (Business to Administration)	7.2%
B2B (Business to Business)	56.3%
B2C (Business to Customer)	17.3%
Combination of B2A+B2B	2.4%
Combination of B2A+B2C	0.0%
Combination of B2B+B2C	11.5%
Combination of B2A+B2B+B2C	5.3%

Source: author

Structure of the respondents divided by the size of turnover is presented in Table 4.

Tab. 4:	Structure of the respondents by size of turnover
Structure by Turnover	
Up to 999,000 CZK	30%
1–4.99 million CZK	28%
5–29.9 million CZK	27%
30–99.9 million CZK	15%

Source: author

In terms of business scope, all basic groups according to the classification of CZ-NACE were represented. The larger group of companies were from the construction industry, wholesale and retail trade, information and communication activities (Table 5).

The sample corresponds to the distribution of enterprises in the economy by the sectors listed in the Statistical Yearbook 2012 [15]. Only in the sector of Information and communication technology and professional activity are there more businesses represented than are is represented in this ratio in the economy. In contrast, a small deviation in the opposite direction can be found in the wholesale market.

The representatives of companies who responded to the questionnaire, were the owners and Chief Executives of companies (60%), or the heads of selected sections (e.g. IT department, financial management, etc.). Most respondents were from Olomouc, Hradec Králové, Liberec and Karlovy Vary regions (it exceeded the limit of 10%). The least respondents were from the Southern Region (1.9%). The number of respondents from other regions ranged between 2.5–9%.

Tab. 5:	Structure of the respondents by CZ-NACE group (A higher level of aggregation SNA/ISIC A 10/11 [16])
Scope of business	
Agriculture, forestry, fishing	5.3%
Manufacturing industry	13.0%
Construction industry	19.7%
Wholesale and retail trade, repair and maintenance of motor vehicles	15.9%
Transport and storage	1.4%
Accommodation, food and service activities	1.4%
Information technology and communication activities	6.3%
Financial intermediation	0.5%
Real estate activities	1.4%
Professional (legal, archit., consulting), sciences and tech. activities	3.8%
Other activities	31.3%

Source: author

3.2 Current and Planned Use of Cloud Computing in Enterprises in the Czech Republic

The respondents were first asked whether they use at least one of the three technologies, namely software for financial management, software for customer relationship management and cloud computing. 29.8% of respondents answered positively.

As for the actual use of cloud computing, the percentage share of firms that use it or are thinking of using it, is very low (8.17%). This technology is not currently used by enterprises and, what's worse, they do not plan to launch it in the future. This expectation is contrary to the estimates of the consulting firms Gartner and IDC [22], [30], which expect significantly greater increase in the use of this technology in the Czech Republic.

The year 2003 was listed as the first of those, during which cloud computing was adopted by the respondents of the survey. Overall, however, the introduction has occurred more since 2008. In terms of types of cloud solutions, private cloud dominates (62.5%) over the public cloud (25%) and hybrid (12.5%). In terms of the distribution model, the most prevalent service was SaaS (50%). Table 5 shows the total interest for the various cloud solutions with regard to the provider. This is the sum of the respondents who have cloud, or some of those planning to implement it within the company (see table 6).

Tab. 6: Interest in various types of cloud services

Google Apps	36.4%
Microsoft Windows Azure	18.2%
Google App Engine	13.6%
Amazon Web Services	4.5%
Private cloud from VMware	4.5%
Other	22.7%

Source: author

3.3 The Benefits of Cloud Computing

The expected benefits, which managers and chief executives of companies are aware of and which they expect from cloud computing (whether they are planning to introduce it or not) include: scalability and flexibility of services (26%), online technical support available in case of problems (25%), work from home (24%), and access to corporate data from anywhere (Fig. 1).

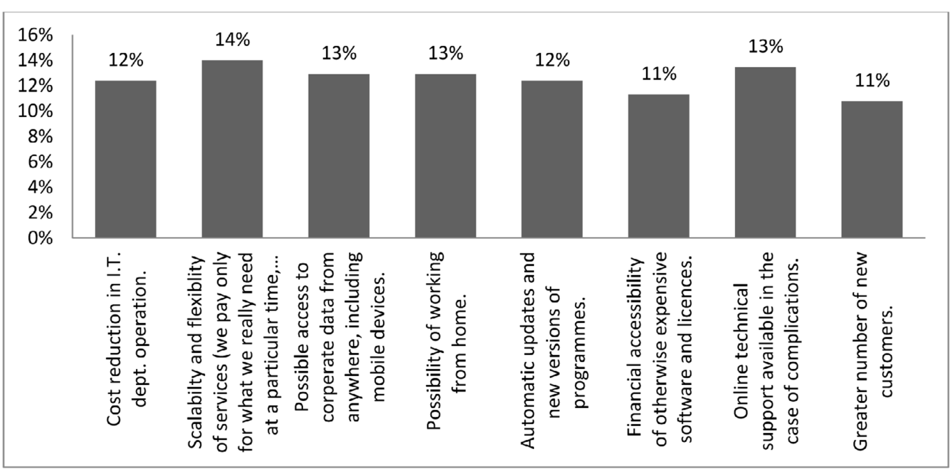
The above benefits will take on even more importance in the future due to the experience of increasing usage of mobile technologies. Many employees already use their own mobile devices within the work process. Opportunity to showcase a product to a customer, as well as quickly finding adequate information will contribute to higher customer satisfaction. What benefits cloud computing will have for the enterprise depends purely on the business itself and its approach to the use of this technology. The potential which exists here in relation to cloud computing is at a high level.

3.4 Barriers to the Introduction of Cloud Computing

The introduction and use of cloud computing also involve some risks and some corporate managers perceive certain barriers to the implementation. The respondents stated for example:

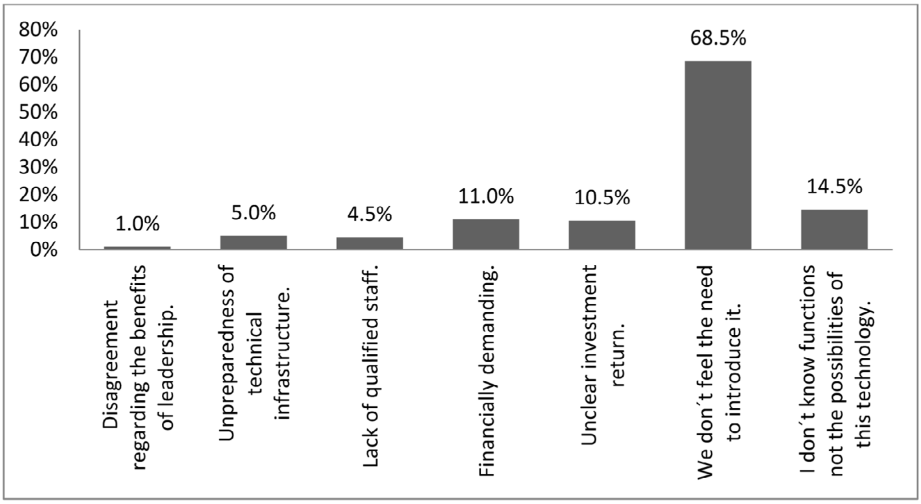
- data security,
- dependence on the operation of the Internet connection,
- lack of knowledge regarding cloud computing options,
- set low priority of the perception of the necessity and usefulness of cloud computing and the associated lack of time to analyse the strengths and weaknesses,
- the financial burden.

Fig. 1: The benefits of cloud computing in enterprises in the Czech Republic (in %)



Source: author

Fig. 2: Barriers to the introduction of cloud computing



Source: author

In terms of options, the major cause of the lack of cloud computing in companies is that companies do not feel the need to introduce this technology (68.5%), ignorance of its capabilities (14.5%), financial demands and unclear return on investment (about 11%). Other barriers to the introduction are shown in Fig. 2.

3.5 Financial Expenses on Cloud Computing and Performance Assessment Methods in Enterprises

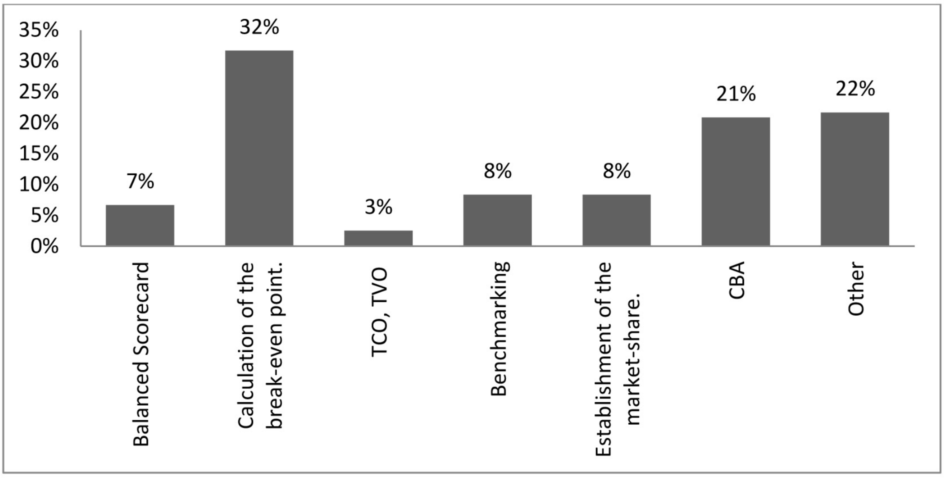
From the above answers it can be assumed that the willingness to invest certain amounts of money into cloud computing will not be too high. 83.2% of respondents would be willing to invest a sum up to 10,000 CZK and 10% would invest the amount in the range of 11 to 100,000 CZK.

Another area of the research was the relationship and attitude of companies towards the performance assessment methods of enterprises. In the event that companies want to invest in IT in the future, one of the criteria for the selection of the technology is the return on investment. The following graph (Fig. 3) shows the use of the methods within enterprises. 87 companies replied, the other companies did not identify any of the methods. Based on the experience of the author with relatively low use of specialised methods to calculate the performance of companies in the Czech Republic [36], methods that evaluate the performance of companies only as its part (such as the Balanced ScoreCard) were also included.

Quality of now used systems of financial analysis is in direct correspondence with complexity. In spite of the fact, that the basic process of input data processing does not have necessary declaring ability, those are used frequently without desired result. Complicated systems, that provide results describing state of analyzed company more accurately, are usually for users of financial analysis unclear [25].

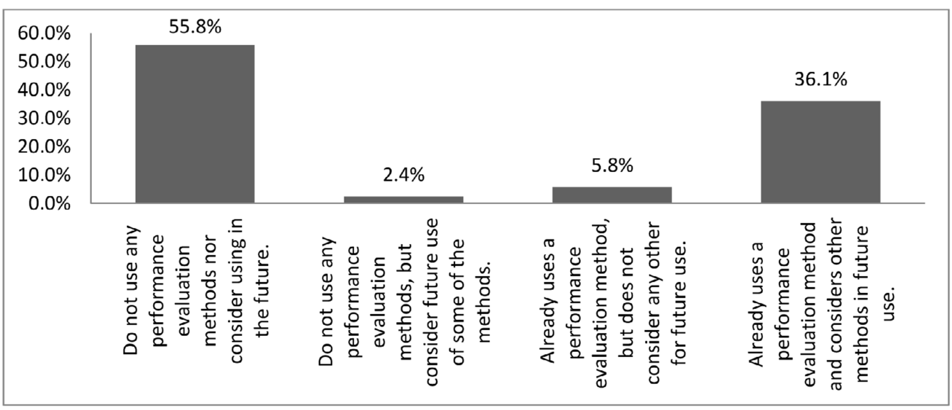
In the future, 38% of the companies are planning a change in approach, it is more likely to be a change regarding the selection of the assessment method. 56% of the companies stated that they are not planning to use any method of performance evaluation in the future.

Fig. 3: The percentage representation of the use of different performance evaluation methods



Source: author

Fig. 4: Representation of the number of companies according to their relation to the use of the performance evaluation methods



Source: author

This result can be described as very negative. Due to the current time when there is a pursuit of more effective management of enterprises and their development, feedback is very important (Fig. 4).

3.6 Analysis of Responses in Relation to the Type of Enterprise

The respondents' answers were also analysed in relation to company size, focus of the scope and by type of business relationships. All the answers in relation to the above factors, however, are not described in detail, because the structure of the responses was not affected by this breakdown. As an illustration, table 7 outlines the willingness of companies to invest in cloud technologies. As it is evident from the absolute expression of the responses, most companies regardless of their business scope would be willing to invest a maximum of 10,000 CZK.

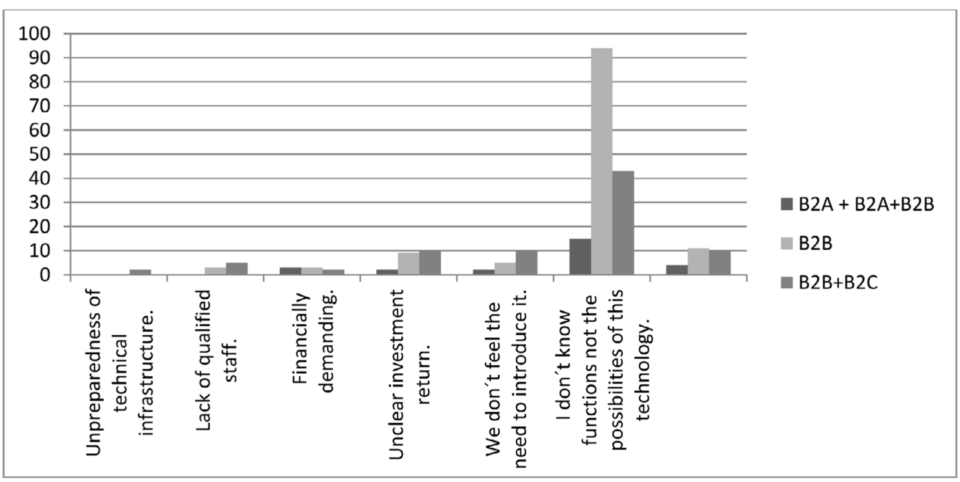
Tab. 7: Interest in various types of cloud services

	0 (freeware)–10,000 CZK	11–100,000 CZK	101–200,000 CZK
Agriculture, forestry, fishing	11	0	0
Manufacturing industry	23	3	1
Construction	37	4	0
Wholesale and retail, repair and maintenance of motor vehicles	27	3	3
Transport and storage	3	0	0
Accommodation, food and service activities	2	0	1
Information technology and communication activities	8	5	0
Financial intermediation	0	1	0
Real estate activities	2	0	0
Professional (legal, archit., consulting), sciences and tech. activities	6	1	1
Other activities	54	4	6

Source: author

Figure 5 describes the barriers to the adoption of cloud computing in relation to the type of company business relationship. The structure of the answers is constant. Firms agreed that they do not feel the need for change other problems were financial difficulty and unfamiliarity of the technology options.

Fig. 5: Barriers to the adoption of cloud computing in relation to type of company business relationship



Source: author

3.6 Summary

In August 2013, a questionnaire survey was carried out among small and medium-sized companies, which aimed to map the use of the selected information technologies. Specifically, it was the software for financial management, software for relationship management with customers and cloud computing. This paper summarises the results of the questionnaire survey focused on cloud computing.

Only 8.7% (i.e. 17 respondents) stated that they have or are planning to implement cloud computing. This result is quite different from the predictions of consulting firms such as IDC, which predicts that spending on cloud services and hosting in the Czech Republic should grow in future years by the annual growth rate of 43%. The research corresponds with the results of the Aspectio Research Agency [3], which took place in the Czech environment at relatively similar sample of firms (small and medium-sized). The similarity is particularly in the large proportion of respondents (70% of firms) who did not know the term at the time of the research. The company also expressed an interest in the technology, after introduction to this concept (40% of the respondents within the survey [3]). That fact however, does not correspond with the investigation carried out by UHK two years later, when the effective increase in users did not occur.

One of the biggest obstacles to the use of cloud computing (in the event that the companies consider using it) is the unclear return on investment, ignorance of cloud features, financial requirements. All these barriers show the ignorance of the concept of cloud computing. Unclear return on investments is related to the fact that less than half of the companies use the performance assessment methods. If the companies were engaged in calculating the return on investments in IT, most commonly they would use the method of tipping point and the cost-benefit assessment (CBA). To improve this situation it would be appropriate to make businesses more focused on familiarisation with the methods of providing information regarding the effectiveness of such technologies. For instance, the service contracts between providers and beneficiaries of the technology can include the so-called Service Level Agreement (SLA). This can be a legally binding formal or an informal "contract" (for example, internal department relationships). SLAs commonly include segments to address: a definition of services, performance measurement, problem management, customer duties, warranties, disaster recovery, termination of agreement [39]. The company Cisco Systems, Inc. implements the agreement on the quality of service in its devices under the name Cisco IOS IP and among the monitored metrics are: Delay, Jitter, Packet loss, Packet sequencing, Connectivity, Server or website download time [11].

On the other hand, managers and executives of the companies are aware of and would expect from cloud computing (whether they are planning to introduce it or not) certain benefits that include: scalability and flexibility of services, available online technical support, the ability to work from home and access to corporate data from anywhere.

A fundamental aspect of the extent to which firms in the Czech Republic use or are planning to use cloud computing, is the need for change, which in the context of information technologies they argue that they do not need it. Due to the rapid development in mobile technologies and predicted domestic and global trends, it is expected that this attitude will change leading to a greater use of cloud computing.

Conclusion

The aim of this paper was to characterise the capabilities and benefits of the use of cloud computing in Czech companies, the current state of its use, to compare the degree of its deployment in the Czech Republic, European Union environment and on a global level. The aim was also to assess the validity of the hypothesis: "Czech enterprises consider cloud computing as an important technology for their business and they plan its implementation in the near future".

Based on the analysis of the available resources that characterise the prediction of future development in use of cloud computing on a domestic and on a global level, we can say that there is a rise expected in the use of this technology. Currently it is mainly used in the USA, followed by Europe. World agencies expect an increase in market share of cloud computing in Europe by 5%. In the USA there is already a decline expected. For the Czech Republic a much higher increase in the use is predicted (according to IDC by 43% year-on-year). But the questionnaire survey, which was conducted in 2013 among 200 Czech firms, talks about the interest in cloud computing in units of percent. Czech companies do not know this concept (91%, i.e. 191 of the total 208 respondents) and are not interested in the introduction of cloud computing.

In 2012, the European Commission established a strategic document entitled "Strategy for the Integration of cloud computing in the European Union" [18] which supports the introduction of cloud computing in European companies and in government institutions. The potential of cloud computing and its potential benefits, especially in the area of cost savings, are nationally known. Its implementation, however, is mostly prevented by an ignorance of the possibilities of this technology in Czech enterprises. The surveyed hypothesis of "Czech enterprises consider cloud computing as an important technology for their business and they plan its implementation in the near future" cannot be confirmed.

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Abstract

DEPLOYMENT OF CLOUD COMPUTING IN SMALL AND MEDIUM-SIZED ENTERPRISES IN THE CZECH REPUBLIC

Petra Marešová, Vítězslav Hálek

Globalisation is a phenomenon that is reflected in all spheres of social life. Information technologies have a key role in globalisation. Thanks to them is possible to divide labour on a global scale, monitoring and use of comparative advantages (for the raw materials, cheap labour sources, effective demand) in their – that offer advantageous conditions. The technologies, which are predicting significant future growth in cloud computing. Cloud computing is a set of information and communication technologies in which IT resources are delivered in the form of services to external users via the Internet.

The aim of this paper is to describe the use of cloud computing in Czech companies and compare its deployment to other countries. Characteristics of the use of cloud computing in Czech enterprises are based on surveys conducted by local and international agencies and on their own research. Their own research was conducted in the autumn of 2013. There were 200 respondents from small and medium-sized enterprises across all sectors of CZ – NACE. Enterprises were asked about their knowledge of the chosen technologies, the rate of utilisation, the expected benefits of these technologies, or if they are interested in its deployment in the future.

As revealed from the results of this survey, many managers and business owners do not know the term cloud computing and do not know which specific services and benefits can be expected. Managers also do not feel the necessity to change the state of the IT department, so currently there IS only a small proportion of companies that plan to implement cloud computing.

Implementation of cloud computing is supported ON a national and international level, savings and benefits from the deployment of this technology are also evident. In this context, lack of knowledge of this concept and low deployment of cloud computing in Czech enterprises is a negative phenomenon.

Key Words: *Cloud computing, business, research.*

JEL Classification: *M15, M21.*

DOI: *10.15240/tul/001/2014-4-012*

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