Pan-European University

Creative and Knowledge Society

International Scientific Journal

2 2017

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Globalization and Inequality in EU countries during program period 2007-2013

Sklenár Dávid, Stehlíková Beáta

Abstract

Globalization is a broad concept casually used to describe a variety of phenomena of countries. However, there is no universally accepted definition and there is no standard measurement for globalization. Many attempts have been made to measure globalization. The aim of the paper is to find out if globalized countries are experiencing less income inequality. Globalization is multidimensional, so we qualify it in three aspects. In the paper the ratio of FDI inflows to GDP will be regarded as an indicator of financial globalization. The value of the membership function, which is derived from the value of this indicator, represents the degree of belonging among financially globalized countries. We can define the openness of the economy as the relationship between the exports and imports of goods and services to gross domestic product. We consider the openness of the economy as a measure of trade globalization. The proportion of the Structural Funds on GDP represents the degree of the economicall and social globalization. Income inequality is evaluated using the Gini coefficient. Path analysis was used to model the dependent variables of globalization and income inequality. A c-fuzzy cluster analysis was used to create clusters of similar countries in terms of fuzzy income inequality and new indices of globalization. Scientific aim oft he paper is to introduce three single indices – the trade globalization index, the financial globalization index and the cohesion index as fuzzy membership functions. We analyze the dependence of the new indices and the degree of income inequality. Using fuzzy c-cluster analysis, we create clusters of similar EU countries in the years 2007, 2010 and 2013. We created clusters of countries with a similar level of globalization and income inequality. In the first cluster there are economically and socially highly globalized countries with a relatively high income inequality, with an average globalization of trade and lower financial globalization. A significant change in the values of the analyzed indicators in the country results in migrating states between clusters.

Introduction

Globalization and inequality are topics which are often debated in literature. The history of the globalization of its borders, as well as globalization as a political instrument are presented by Weiss (2000). Polasek & Sellner (2013) deal with globalization at the NUTS 2 level in 27 EU countries. By economic globalization they mean an increase in economic integration and interac-tion between countries. They agree with the definition of globalization by Clark (2000). Polasek & Sellner (2013) establish the extent of globalization, integration and technology transfers to regions at the NUTS 2 level and consider the openness of trade as a condition for peace globalization. Badinger & Tondl (2005) take a separate look at the share of exports to GDP and the share of im-ports in GDP as growth drivers. According to Tondl & Vuksic (2007), FDI stock was the main de-terminant of growth in Eastern Europe in the late 90s. Tondl & Vuksic (2007) and Polasek & Sellner (2013) have consistently regarded the share of FDI inflow and GDP as a measure of tech-nology transfer. Cappelen et al. (2003), and Puigcerver-Penalver (2007) and Becker et al. (2010) found a significant association between the use of Structural Funds and GDP growth. Dreher (2006) concludes that to globalize the economies of poor countries in order to achieve economic growth and reduce poverty does not suffice. Goldberg & Pavcnik (2007) give an overview of the impact of globalization on income inequality. They identify a significant effect of reducing in-come inequality due to changes in the trade policy of the countries. Beer and Boswell (2001) also examined the impact of globalization on income inequality

1 Material and Methods

Globalization as a multidimensional phenomenon is quantified in three aspects. We introduce three new single indices – the trade globalization index, the financial globalization index and the index of economic and social globalization – as values of the fuzzy membership functions. The ratio of FDI inflows to GDP is often used as a measure of technology transfer. It is also ameasure of the financial openness of the country. The ratio of FDI inflows to GDP will be regarded as an indicator of financial globalization. The value of the membership function, which is derived from the value of this indicator, represents the degree of belonging among financially globalized countries. Based on this theory, we can define the openness of the economy as the relationship between the exports and imports of goods and services to gross domestic product. We consider the openness of the economy as a measure of trade globalization.

The Structural Funds and the Cohesion Fund are financial tools set up

to implement the regional policy of the European Union. They aim to reduce regional disparities in terms of income, wealth and opportunities. A country that does not need funding from the Structural Funds will be regarded as globalized from the economic and social point of view. A smaller proportion of the Structural Funds on GDP means that the country is more economically and socially globalized.

Income inequality is evaluated using the Gini coefficient. The Gini coefficient is defined as the relationship of the cumulative shares of the population arranged according to the level of equivalised disposable income, to the cumulative share of the equivalised total disposable income received by them. The higher the value of the Gini coefficient is, the higher the inequality the income distribution in society is.

Path analysis was used to model the dependent variables of globalization and income inequality. The path analytic method is an extension of the multiple regression analysis. A linguistic variable is a variable with values that are words or sentences in natural languages. Fuzzy sets are used to express the contents of a linguistic variable Klir (1995). The attributes - descriptors of suitable income inequality, required trade globalization, required financial globaliztion, required economic and social globalization - can be understood to be linguistic variables.

Consider the crisp set A of the universe U. The fuzzy set A is defined by a set of ordered pairs, a binary relation $A = \left\{ (x, \mu_A(x)) \colon x \in A, \ \mu_A(x) \in \langle 0,1 \rangle \right\}$, where $\mu_A(x)$ is a function $\mu_A(x) : U \to \langle 0,1 \rangle$ called membership function. The value $\mu_A(x)$ is the grade of membership of x to A. The value $\mu_A(x)$ specifies the grade or degree to which any element x in U belongs to the fuzzy set A. Larger values of $\mu_A(x)$ indicate higher degrees of membership. Fuzzy numbers are special cases of fuzzy sets. The trapezoidal fuzzy number $A(a_1, b_1, b_2, a_2)$ is defined by membership function

$$\mu_A(x) = \begin{cases} \dfrac{x - a_1}{b_1 - a_1}, & a_1 \leq x \leq b_1, \\ 1, & b_1 \leq x \leq b_2, \\ \dfrac{x - a_2}{b_2 - a_2}, & b_2 \leq x \leq a_2, \\ 0, & \text{otherwise.} \end{cases} \quad (1)$$

A linguistic variable is a quintuple (v, T, X, G, M), where v is the name of the variable, T is a set of natural language terms from which v can be taken on its values, X is a universe set, a common set on which the fuzzy sets corresponding to the linguistic variable are defined, G is the context free grammar, syntactic grammar which produces terms in $T(x)$, M is the semantic rule which maps terms in $T(x)$ to fuzzy sets in X. M assigns to each linguistic term $t \in T$ its meaning $M(t)$, which is a fuzzy set on X. A new index of globalization is the value of membership function of the linguistic term.

A c-fuzzy cluster analysis was used to create clusters of similar countries in terms of fuzzy income inequality and new indices of globalization.

The subject of cluster analysis is the classification of objects into categories. For a given finite set of data the problem of clustering is to find cluster centers that properly characterize classes. Let $Z = \{z_1, z_2, ..., z_n\}$ be a set of data. The fuzzy c partition of Z is a family $\wp = \{P_1, P_2, ..., P_c\}$, of fuzzy subsets of Z, for which $\sum P_i(z_k) = 1$, $P_i(z_k) \geq 0$, for all z_k, $k = 1, 2, ..., n$, $i = 1, 2, ..., c$. The cluster centers associated with the partition are calculated by the formula

$$t_i = \frac{\sum_{k=1}^{n} [P_i(z_k)]^m x_k}{\sum_{k=1}^{n} [P_i(z_k)]^m}, \qquad (2)$$

$i = 1, 2, ..., c$, where $m > 1$. We use $m = 2$. The smaller value of the Bezdek index

$$\boldsymbol{J}_m(\wp) = \sum_{k=1}^{n} \sum_{i=1}^{c} [P_i(z_k)]^m \|\mathbf{z}_i - \mathbf{t}_i\|^2, \qquad (3)$$

where $\|.\|$ is an inner product induced norm, indicates the better fuzzy c partition $\wp$.

In this paper we analyse data for 28 European Union countries in the years 2007, 2010 and 2013. One of the considered aspects of the milli-dimensionality of globalization is the share of Structural Funds and GDP. The conditions for drawing on the Structural Funds are homogeneous over the program period. That is why we focused on the years from the 2007-2013 programming period. All data comes from Eurostat's public database.

2 Results and discussion

Income inequality measured by the Gini coefficient is falling in EU countries during the reporting period. Also the range Gini coefficient decreased in all years: 2007, 2010 and 2013.

The lowest trade globalization is in the year 2010. The highest trade globalization is in the year 2013. The financial globalization of the countries was the most affected by crisis. The number of countries with a share of FDI inflow to GDP of 5 percent or more dropped from the number 19 in 2007 to 7 in 2010 and only 4 (Ireland, Luxembourg, Malta, Netherlands) in 2013.

Globalization is viewed as a multi-dimensionalphenomenon, which is accomplished through a range of different processes. The results of the modelling of linguistic variables, which represent new partial indices of globalization, are as follows. In the next section we describe an example of fuzzy Gini index construction in detail. For other indices we present the resulting membership function.

The name of the linguistic variable is income inequality. In fuzzy modelling, we consider the lower values of the Gini coefficient as good. It is given

as a numerical value on universe $X = (20, 45)$. The possible values for the linguistic variable are linguistic terms $T(\text{income inequality}) = \{\text{very small, small, suitable, large, very large}\}$. The primary term is "suitable". The semantic rule is M (suitable) $= \{(x, \mu_{suitable}(x)): x \in (20, 45)\}$, where

$$\mu_{suitable}(x) = \begin{cases} 1, & 15 \leq x \leq \min, \\ \dfrac{x - \max x_i}{\min x_i - \max x_i}, & \min x_i \leq x \leq \max x_i, \\ 0, & \text{otherwise.} \end{cases} \quad (4)$$
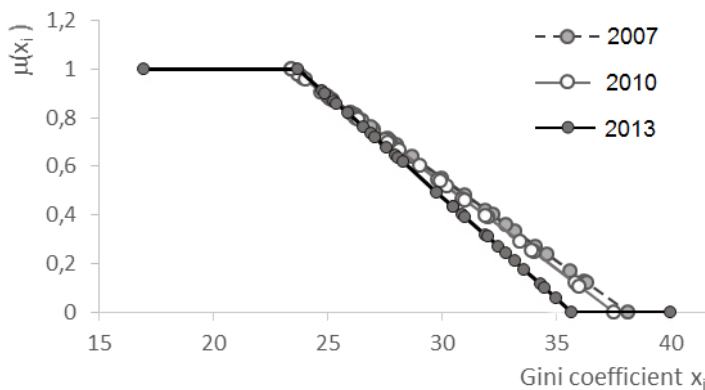
Source: Own calculations

Grapf 1 *The meaning of the term "suitable" for the linguistic variable income inequality*

We define the linguistic variable economic and social globalization on universe $(0, 4)$. The primary term is "required". The semantic rule is M (required) $= \{(x, \mu_{required}(x)): x \in (0, 4)\}$, where

$$\mu_{required}(x) = \begin{cases} 1, & 0 \leq x \leq \min, \\ \dfrac{x - \max x_i}{\min x_i - \max x_i}, & \min x_i \leq x \leq \max x_i, \\ 0, & \text{otherwise.} \end{cases} \quad (5)$$

We define the linguistic variable trade globalization on universe $(30, 400)$. The primary term is "required". The semantic rule is M (required) $= \{(x, \mu_{required}(x)): x \in (30, 400)\}$, where

$$0, \quad 30 \le x \le \min,$$

$$\mu_{required}(x) = \frac{x - \min x_i}{\max x_i - \min x_i}, \quad \min x_i \le x \le \max x_i, \qquad (6)$$

$$1, \qquad \text{otherwise.}$$

We define the linguistic variable financial globalization on universe (-20, 60). The primary term is "required". The semantic rule is M (required) = {$(x, \mu_{required}(x))$: $x \in$ (-20, 60)}, where

$$0, \quad -20 \le x \le \min,$$

$$\mu_{required}(x) = \frac{x - \min x_i}{\max x_i - \min x_i}, \quad \min x_i \le x \le \max x_i, \qquad (7)$$

$$1, \qquad \text{otherwise.}$$

In the next step, we created a multiple linear regression model for standardized variables – a path model. The goal is to model the relationship between the indices of globalization and income inequality. The model created using path analysis is suitable and statistically significant for 2007 and 2013 (Table 1).

Table 1 *Results of the path analysis*

Characteristics	2007	2010	2013
Coefficient of determination	0.2089	0.2667	0.4329
Value of *F* statistics	0.1252	2.9093	6.1070
P-value	0.1252	0.0552	0.0031

Source: Own calculations

The variable that has the strongest impact on income inequality is the globalization of trade. Path analysis confirmed that the globalization of trade actually reduces the income inequality in EU countries. The intensity of income inequality reduction increased over the years (beta coefficient in Table 2). Economic and social globalization increases income inequality. Financial globalization increases income inequality between 2007 and 2013. In 2013, all the coefficients are significant – P-values are less than 0.01 (Table 2).

Table 2 *Results of the path analysis*

Year	Indicator	Beta Coefficient	Standard Error	Value of the *t* Statistics	*P*-value
2007	Trade globalization	-0.2284	0.2005	-1.1395	0.2658
	Economic and social globalization	0.3889	0.1910	2.0366	0.0529
	Financial globalization	-0.1756	0.2097	-0.8376	0.4105
2010	Trade globalization	-0.5329	0.2139	-2.4914	0.0200
	Economic and social globalization	0.3063	0.1752	1.7477	0.0933
	Financial globalization	0.2759	0.2136	1.2918	0.2087
2013	Trade globalization	-0.9743	0.2419	-4.0271	0.0005
	Economic and social globalization	0.4741	0.1679	2.8240	0.0094
	Financial globalization	0.6775	0.2388	2.8379	0.0091

Source: Own calculations

Finally, we created clusters of countries with a similar level of globalization and income inequality. In the first cluster *A* there are economically and socially highly globalized countries with relatively high income inequality, with an average globalization of trade and lower financial globalization. Figure 1 presents typical representatives of the two clusters *A* and *B*. It is interesting that the crisis did not affect the globalization of trade of the typical representative of cluster *A*.

Source: Own calculations

Figure 1 *Cluster centers associated with the partition in fuzzy c-cluster analysis after the inverse transformation*
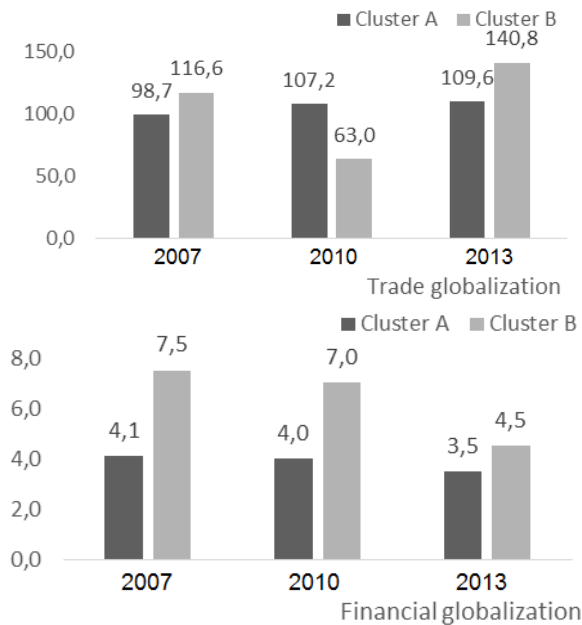
Source: Own calculations

Figure 2 *Cluster centers associated with the partition in fuzzy c-cluster analysis after the inverse transformation (continue)*

Table 3 *The values of the membership function Ax to the cluster A and Bx to the cluster B*

2007			2010			2013		
Country	*Ax*	*Bx*	**Country**	*Ax*	*Bx*	**Country**	*Ax*	*Bx*
Austria	0.971	0.029	Cyprus	0.986	0.014	Denmark	0.986	0.014
Cyprus	0.966	0.035	Germany	0.959	0.041	Germany	0.984	0.016
Finland	0.957	0.043	Austria	0.955	0.045	Austria	0.978	0.022
Germany	0.953	0.047	Netherlands	0.954	0.046	France	0.914	0.087
Netherlands	0.952	0.048	Finland	0.948	0.052	Finland	0.911	0.089
France	0.947	0.053	France	0.936	0.064	Cyprus	0.911	0.089
Denmark	0.909	0.091	Denmark	0.922	0.078	Belgium	0.890	0.110
Sweden	0.894	0.106	Italy	0.899	0.101	Sweden	0.883	0.117
Belgium	0.881	0.119	Sweden	0.886	0.115	Netherlands	0.862	0.138
Spain	0.831	0.169	Ireland	0.880	0.12	Italy	0.860	0.140
Italy	0.822	0.179	Spain	0.856	0.144	United Kingdom	0.838	0.162
			United Kingdom	0.807	0.193	Ireland	0.819	0.181
Ireland	0.779	0.221	Belgium	0.651	0.349	Spain	0.693	0.308
United	0.755	0.245						

2007			2010			2013		
Country	*Ax*	*Bx*	Country	*Ax*	*Bx*	Country	A_x	B_x
Kingdom								
Luxembourg	0.609	0.391	Luxembourg	0.606	0.394	Luxembourg	0.571	0.429
Slovenia	0.600	0.400	Slovenia	0.589	0.411	Slovenia	0.561	0.439
Greece	0.584	0.416	Greece	0.557	0.443	Greece	0.534	0.466
Portugal	0.392	0.608	Portugal	0.351	0.649	Portugal	0.372	0.628
Croatia	0.280	0.720	Croatia	0.350	0.65	Croatia	0.296	0.704
Malta	0.228	0.773	Slovak Republic	0.266	0.734	Malta	0.248	0.752
Bulgaria	0.212	0.788	Czech Republic	0.230	0.771	Czech Republic	0.230	0.771
Estonia	0.208	0.792	Hungary	0.213	0.787	Slovak Republic	0.218	0.782
			Malta	0.206	0.794			
Poland	0.152	0.848	Latvia	0.170	0.83	Hungary	0.158	0.842
Slovak Republic	0.150	0.850	Bulgaria	0.158	0.842	Latvia	0.153	0.847
Latvia	0.143	0.857	Romania	0.151	0.849	Romania	0.116	0.885
Lithuania	0.141	0.859	Lithuania	0.071	0.929	Poland	0.076	0.924
Czech Republic	0.137	0.863	Poland	0.067	0.933	Estonia	0.072	0.928
Hungary	0.079	0.921	Estonia	0.027	0.974	Bulgaria	0.072	0.928
Romania	0.049	0.952				Lithuania	0.050	0.950

Source: Own calculations

The most developed EU countries are in the first cluster *A* (value of the membership function is greater than 0.8).

Ireland and United Kingdom belong more to the group of the uncertain countries, and are tending more to cluster *A* than to cluster *B*, in 2010. In 2013, Ireland and the UK again belong to the cluster *A* of the developed countries. In both countries there has been a reduction in income inequality and increasing financial globalization in 2010.

Spain left cluster *A* of the most developed countries in 2013. This was due to the evolution of the Spanish economy during the crisis and beyond. In Spain, there has been a decline in the share of FDI inflows and GDP. At the same time there has been an increase in income inequality in Spain.

In Cyprus, the crisis culminating in 2012 and continuing in 2013, is obviously not reflected in the results. Luxembourg is among the uncertain countries tending more to cluster *A* than to cluster *B*.

The most globalized country in the EU is Luxembourg. However, the value of the Gini index is very low - only about 3 percent higher than the lowest value of the Gini index in the EU.

Another specific country the group of the uncertain countries, and tending more to cluster *A* than to cluster *B* is Greece. Poland, Latvia, Lithuania, Romania

are in cluster *B* in 2007, 2010, 2013. Estonia, Bulgaria are in cluster *B* in 2010 and 2013. Bulgaria increased its financial and trade globalization, but at the cost of increasing income inequality. This is in line with our established model.

For Estonia, the decline to cluster *B* is caused by a reduction in the value of financial. The countries Portugal, Croatia and Malta belong to the group of uncertain countries, and are tending more to cluster *B* than to cluster *A*.

The Slovak Republic and Czech Republic belong to the group of uncertain countries, and tend more to cluster *B* than to cluster *A* in 2010 and 2013. The globalization of trade increased in Slovakia. Income inequality slightly decreased. This is another example confirming the adequacy of our model.

Conclusion

In this paper we use the apparatus of fuzzy sets introduced in a natural way, based on economic theories, the trade globalization index, the financial globalization index and the index of economic and social globalization.

In the next step, we created a multiple linear regression model for standardized variables. The variable that has the strongest impact on income inequality is the globalization of trade. Analysis confirmed that the globalization of trade actually reduces the income inequality in EU countries. Economic and social globalization increase income inequality. Financial globalization increases income inequality only in 2007 and 2013. In 2013, all the coefficients are statistically significant.

Finally, we created clusters of countries with a similar level of globalization and income inequality. In the first cluster there are economically and socially highly globalized countries with a relatively high income inequality, with an average globalization of trade and lower financial globalization. Changing the level of individual aspects of globalization, respectively. income inequality, results in migrating countries within clusters.

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INFORMATIONAL CITY IDENTITY AND ENTREPRENEURSHIP: JAPANESE MAJOR CITIES AS CASE STUDIES

Andreas Meier, Kaja J. Fietkiewicz

Abstract

Japan, once a synonym for economic success and innovation, struggles economically since the bursting of the speculative bubble in the 1990s. Even if recent stimulus packages seem to slowly bear fruit, the country probably won't be anywhere near its old strength anytime soon. One of the reasons for Japans lasting struggle may be the lack of entrepreneurial activity, well documented by the Global Entrepreneurship Monitor (GEM), which regularly ranks the nation that spawned Toyota, Sony and Mitsubishi in the lower part of its Global Report Rankings. When it comes to starting an own business, Japanese Culture, so the argument goes, nowadays fosters fear of failure rather than entrepreneurial spirit. However, not only countries, but also cities have their own cultural identity—be that an industrial metropolis, a harbour town or a religious place of pilgrimage. The aim of this study is to find out, whether there is a correlation between the identity of a city (emerged during its development as an informational city) and the entrepreneurial activity in this region. For this purpose we investigated 10 of Japans major emerging informational cities by collecting data on four different infrastructures: the ubiquitous (digital) infrastructure, the smart infrastructure, the knowledge infrastructure and the creative infrastructure. We correlated these factors with the entrepreneurial activity in the cities in order to answer the following questions: does the identity of a city have any influence on the level of entrepreneurship within it? And, is there a correlation between the entrepreneurial activity and one of the four infrastructures of an informational city?

Keywords: Entrepreneurship, Informational City, Cities of the Knowledge Society, City Identity

JEL Classification: M10, M21, O1, R3

Introduction

Since entrepreneurial activity is widely regarded as one of the key factors for the overall economic prosperity of a country, the question if certain cultures foster entrepreneurship more than others is of special interest, not only in the field of entrepreneurship research, but also for policy makers who wish to design effective government programs which promote economic growth. When it comes to Japan, there are many who argue that cultural barriers are the reason for its lack of entrepreneurial spirit. And indeed, the results of the annually published Global Entrepreneurship Monitor (GEM) Reports seem to substantiate this theory. In these Reports which aim "to measure differences in the level of entrepreneurial activity between economies" (Amorós et al. 2014, p. 11) Japan is regularly ranked in the lower regions of the worldwide comparison. In the latest report of 2013 Japans TEA (Total early-stage Entrepreneurial Activity) rate is the second lowest of all countries (Amorós et al. 2014, p. 12), while it has the second highest 'fear of failure'-rate together with Italy and Greece (Amorós et al. 2014, p. 26). The fact that the average 'fear of failure'-rate is higher in the Asia Pacific and South Asia region than in any other region of the world could very well indicate the existence of the above-mentioned cultural barrier to entrepreneurship. But if we assume this to be true, another question arises: If Japanese culture really impedes entrepreneurial spirit, why didn't it before? The nation that spawned the likes of Toyota, Sony and Mitsubishi obviously did not have these problems when it rose to an economic superpower. One explanation for a shift in the economic culture of Japan could be the institution of lifetime employment, which seems to, contrary to popular belief, withstand economic crises and endures even in the 21st century (Kato 2001; Matanle et al., 2011). In a comparative study of entrepreneurs in Japan and Silicon Valley Suzuki et al. describe the phenomenon that the highly educated people in Japan tend to prefer jobs in a large corporation instead of building their own businesses so that the Silicon Valley entrepreneurs which took part in the study were higher educated than their Japanese counterparts (Suzuki et al., 2002). The theory: in order to institutionalize lifetime employment a few success stories had to be written, but since the possibility is given, potential Japanese entrepreneurs are settling for a secure job instead of taking any risks by starting a business on their own. This assumption goes along with the very high 'fear-of-failure'-rate reported by GEM.

But although some interesting insights can be gathered by studies aiming to reveal the identity of a country, we chose a different approach to this topic. Since culture even within country boundaries is never truly homogeneous, but differs from region to region and from city to city, this paper looks at it on a smaller level. We aim to examine the relationship between the identity of a city and its entrepreneurial activity. High level of entrepreneurship significantly contributes to regional economic vitality, hence, it is crucial for the economic development to understand factors promoting the creation of new firms (Lee, Florida & Acs, 2004, p. 879). Lee, Florida and Acs (2004, p. 881) argue, that the entrepreneurial activity does not only require a productive and supportive business climate together with educated population, but also a climate where

„creativity, diversity and innovation are encouraged and valued". Therefore, they based their research on factors nourishing the new firm formation in the U.S.A. on indicators like the Bohemian, Diversity or Human Capital Index, and explored potential connections between regional social characteristics and the entrepreneurship level (within a city). Another research based on an approach similar to ours, investigated the theory that creativity generates new ideas and enhances entrepreneurship level in a city, and was based on a cased study of 31 Informational World Cities (Murugadas et al., 2014). The basis of our research are the (emerging) Informational Cities in Japan.

Informational Cities are the prototypical cities of the knowledge society and the new centers of power, (Castells, 1989; Stock, 2011). These cities are characterized by advanced knowledge, digital, creative, and smart (or green) infrastructures as well as specific labor market form (Stock, 2011; Fietkiewicz & Pyka, 2014; Fietkiewicz, Pyka, & Stock, 2015). Not all of these aspects (knowledge, digital or creative infrastructure) have to reach an equal level of advancement within one city (see, for example, the different levels of development for four informational Japanese cites investigated by Fietkiewicz and Pyka (2014), or Fietkiewicz and Stock (2015)). Therefore, in some of the cities the focus may lie on the digital city development, whereas in the others it is set on knowledge or creative city creation. With the time, cities with different „identities" may emerge—creative, digital, smart, or knowledge ones. This notion is also the base for the present case study and main research question: what is the relation between city's identity and its entrepreneurship level?

To answer this question, we quantified the identity of 10 of Japans major cities by collecting data on four different infrastructures: the ubiquitous (digital) infrastructure, the smart infrastructure, the knowledge infrastructure and the creative infrastructure. We examined the correlation between them and the entrepreneurial activity in order to find out if there are any positive correlations between an infrastructure and the level of entrepreneurship in a city. This approach displays some parallels to Florida's (2003; 2004) as well as Lee, Florida and Acs' (2004) assumption that creativity (along with aspects like diversity or human capital) may correlate with entrepreneurial activity and/or economic growth in the city. It is important to note, that they use a very broad understanding of the term „creativity," encompassing the technological (or innovation), economic, and cultural creativity (Florida, 2003, p. 40). In the present case study, these creativity types as well as some of the indices applied by Florida (2004) or Lee, Florida and Acs (2004), are distributed over the investigated infrastructures, for example the Bohemian Index and cultural creativity falling under the creative city infrastructure, or the innovation creativity under the knowledge city infrastructure. Before a more comprehensive explanation of the investigated indicators is given, we will continue with a short overview of related works, which examine the relationship between culture and entrepreneurship.

1 Related Works

As entrepreneurship is a highly individualized process, it is not obvious at first to assume a relationship to the culture of a country or region. Shane et al. define it as the "discovery and exploitation of profitable opportunities" by some people with certain character traits, which differentiate them from others who don't have the potential in becoming entrepreneurs (Shane et al. 2000, p. 217 – 218). The emphasis on the discovery and exploitation of opportunities implies the innovative character of the entrepreneurial process, so this definition not only separates the entrepreneur from the common employee, but also from the self-employed whose work lacks the innovative aspect. In other words: in comparison there are only a few people who can call themselves entrepreneurs. That is why there have been some attempts to identify the personal features that make certain persons successful entrepreneurs and others not (Hornaday et al. 1971; McClelland 1987). Hence, given that culture is a "collective phenomenon, because it is at least partly shared with people who live or lived within the same social environment" (Hofstede 1991, p. 6) and therefore contradicts the individualistic character of entrepreneurship, it of course only makes sense to compare the level of entrepreneurial activity between and not within different cultures.

With the globalization it is only natural that the boundaries of entrepreneurship research in the last two decades slowly expanded from the U.S.A. and Western Europe (Thomas et al., p. 289) to the whole world. So today, besides the Global Entrepreneurship Monitor Reports, there are quite a few works available which examine the relationship between culture and entrepreneurship by comparing different countries in respect of their cultural differences (Hayton 2002; Lee 2001; Mueller et al. 2001; Shane 1992; Stephan et al. 2010; Suzuki et al. 2002; Thomas et al. 2000; Uhlaner et al. 2007). Among these works the cross-national studies of Mueller and Thomas gained particular attention. In "A Case for Comparative Entrepreneurship: Assessing the Relevance of Culture" (2000) the authors ask the question if entrepreneurial traits are universal or if they vary across cultures (Thomas et al 2000, p. 290). In an attempt to answer this question, they define four different character traits which, according to Thomas and Mueller, are commonly associated with entrepreneurs in the relevant literature and investigate to what extent international business and economics students in nine different countries share these traits. The findings show indeed that three of the four defined character traits vary across the nine different countries, but the authors also point out that this result raises more questions than it answers. The central problem: it is unclear if our perception and conception of the entrepreneur is not too strongly influenced by the American archetype to really identify and track entrepreneurs in other cultures. In contrast, the results of the study "Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness" (2001) seem to be far more conclusive in the eyes of Mueller and Thomas. This study raises the same questions as the before-mentioned, but this time focuses on only two of the earlier defined character traits, because an internal locus of control, the belief that one has considerable influence on the outcome of one owns destiny (Rotter, 1966), and

innovativeness are obviously seen as the most important entrepreneurial traits. According to the authors, the results support their hypothesis that individualistic cultures have a higher propensity towards entrepreneurship than collectivistic cultures. The conclusion: "Culture, it appears, may condition potential for entrepreneurship, generating differences across national and regional boundaries." (Mueller 2001, p. 52). While this statement is still somewhat cautious, Lee et al. take it one step further in "Culture, entrepreneurial orientation, and global competitiveness" (2001). They criticize a missing paradigm which could explain the differences in entrepreneurial activity in societies around the world and suggest a "cultural model of entrepreneurship to fill the need" (Lee et al. 2001, p. 402). With this framework Lee and Peterson aim to reveal the level of entrepreneurial orientation in a society. As entrepreneurial orientation isn't equivalent to the term entrepreneurship itself, but consists of the attributes (as it is defined by Lumpkin (1996)) "autonomy, innovativeness, risk taking, proactiveness, and competitive aggressiveness" (Lee et al. 2001, p. 405), the authors are able to link it to the six cultural dimensions of Hofstede (1984). According to Lee and Peterson, a conductive entrepreneurial culture can prosper in a society with the following characteristics: weak uncertainty avoidance, small power distance, masculine, individualistic, achievement-oriented and universalistic (Lee et al. 2001). To support their hypothesis the authors compare five different countries respectively cultural areas (U.S.A., Japan, China, Former Soviet Economies and Mexico) with regard to their entrepreneurial culture. Interestingly the cultural dimensions of the U.S.A. match every aspect of the most conducive entrepreneurial culture. So it seems that Lee and Peterson have fewer reservations to apply the Protestant work ethic to other countries than Thomas and Mueller did.

Since a few might question the applicability of Western values to a culture like the Japanese society, it is not really surprising that Japan has only one of six possible matches in regard to the most conducive entrepreneurial culture. According to the authors, it is the conservative Japanese culture that impedes the entrepreneurial spirit in Japan; e.g. the unwillingness to risk failures, the hierarchical structure and the institution of lifetime employment (Lee et al. 2001, p. 411). But although this point of view is not an uncommon one, there are some who argue against it. Contrary to the before-mentioned authors, Tiessen (1997) does not seem to have an ethnocentric view of entrepreneurship which closely links it to Protestant work ethic and, therefore, idealizes it the way Western countries (in particular the U.S.A) conceptualize it. In "Individualism, collectivism, and entrepreneurship: A framework for international comparative research" Tiessen does not constrain the entrepreneurial process to the innovative act, but emphasizes the importance of resource leverage as well. Those "who generate variety" (Tiessen 1997, p. 367) depend on an individualistic and creative environment while the function of leveraging resources depends on "efficient relationships that thrive under collectivism" (Tiessen 1997, p. 368). Thiessen comes to the following conclusion: "I conceive of individualism and collectivism as two characteristic orientations distributed in varying proportions within and between cultures and individuals. These characteristics are not polar ends

of a continuum, as commonly described." (Tiessen 1997, p. 367).

1.1 Another view on the relationship between entrepreneurship and culture

As we can see, in entrepreneurship research many assume a relationship between the culture of a country and the entrepreneurial activity and orientation of its people. But we have also seen that although some interesting insights can be gathered by such a cultural framework, we have to be cautious not to let an ethnocentric bias cloud our perception of other cultures (Thomas et al. 2000; Tiessen 1997). Therefore we suggest that a cross-cultural analysis does not necessarily have to be a cross-national one. For most nations a cultural homogeneity is merely a myth as even within country boundaries, cultural diversity is the rule rather than the exception. Though especially Japan is often referred to as a very homogenous culture, this assumption does not hold if we really take a good look. Just to state one example: it is somewhat questionable how much culture Okinawans and the people of Tokyo really share. In her study "Entrepreneurship and Regional Culture: The Case of Hamamatsu and Kyoto, Japan" (2009) Yuko Aoyama compares two cities which are not as obviously different, but still offer an interesting perspective on regional varieties. As the title already suggests, the paper examines the way entrepreneurship unfolds under different regional circumstances and how entrepreneurs have to adapt to these specific regional cultures. To do so, Aoyama conducted qualitative interviews with local information technology entrepreneurs, because Hamamatsu as well as Kyoto are successful in this area and the fact that information technology is a completely new sector ensures the lack of traditional ties, which in turn means that entrepreneurs in both cities had to face the same conditions when starting a new business. In her paper Aoyama shows the distinctive differences between the two cities: while the culture in Hamamatsu is "characterized by its openness to outsiders" (Aoyama 2009, p. 505), Kyoto is described as "aloof, indirect, closed, and secretive" (Aoyama 2009, p. 505). Interestingly they both managed to get a foothold in the sector of information technology with totally different strategies. But more importantly, since the two cities are essentially depicted as the opposite of each other, it shows how much the entrepreneurial culture can vary in different regions, even in between country boundaries. Therefore we believe it is more insightful to investigate the relationship between culture and entrepreneurship on a smaller level—in our case the culture of 10 of the biggest Japanese cities. In the following we will describe our methodology and present our findings.

2 Methodology

Four of the Japanese cities we investigated are the (emerging) Informational Cities—Tokyo, Osaka, Yokohama and Kyoto (Fietkiewicz & Pyka 2014; Fietkiewicz, Pyka & Stock 2015). The other selected cities—Hiroshima, Nagasaki, Nagoya, Sapporo, Fukuoka and Kobe—are either part of the so-called Japanese Megalopolis, which concentrates a big population, industrial and commercial facilities as well as financial wealth (Karan 2009, p. 250), or are seen as emerging hubs for telecommunications and telematics (Karan 2009, p. 252).

We also included the city Kawasaki, which was considered as "one of the most advanced informational cities in Japan" (Fujioka et al. 1990, p. 109) as early as in 1990. Hence, all investigated cities are emerging and/or potential informational cities, which are the prototypical cities of the knowledge society in the 21st century (Yigitcanlar, 2010; Stock, 2011). Such cities are based on advanced technology, knowledge and culture, information flow as well as the interaction between these aspects (Castells 1989; 1991). Our main source for data was the Statistics Portal Site of the City of Yokohama[1] which comprises a lot of information related to these cities and relevant for our research. Unfortunately, due to the fact that Nagasaki was not included in those statistics and comparable data could not be retrieved at this stage of the research, we restrained from investigating this city.

For each of the investigated cities we collected data in order to establish expressive representations of the four infrastructures of an informational city (Stock 2011; Fietkiewicz & Pyka 2014)—the ubiquitous (digital) infrastructure, the smart infrastructure, the knowledge infrastructure and the creative infrastructure. The digital infrastructure includes the number of ICT companies (information and communications technology) and the number of hotspots in each city. The statistic on hotspots was not covered by the Statistics Portal Site of the city of Yokohama but we were able to retrieve suitable numbers from another source[2]. The number of parks, the total amount of cars and the area of parking space (in hectare) in each city represent the infrastructure of a smart or green city (also defined as the smart city in narrow sense, see Fietkiewicz and Stock (2015)). In this case, the fewer cars and the fewer parking spaces are in the city, the better are the metrics of the smart infrastructure. The knowledge infrastructure is depicted through the number of universities and libraries, the count of students as well as the scientific output—quantity of patents (as researched in the WIPO database) and scientific publications (as researched in Web of Science) per year. The number of establishments designated for artistic, cultural or entertaining purposes shape the creative infrastructure of a city. Among those facilities are museums, theatres, movie theatres, establishments for big events (stadiums, concert halls and race tracks) and establishments for entertainment (namely bowling alleys and game centres).

A simple addition of the numbers for each infrastructure would not show a representative image of the cities, since Tokyo as the biggest one would probably lead in every category. Therefore, we calculated relative values for each category (per 1,000 inhabitants in each city). Furthermore, we normalized the gathered numbers, as it would not be accurate to add different types of data like the amount of students and the number of patents per 1,000 inhabitants. We used the corresponding percentage numbers of each factor, which where the outcomes of a relativization process. For example, Kyoto has the highest amount of students per 1,000 inhabitants (91.744) while Osaka has the lowest relative number (10.454). Therefore this factor is marked with 100% for Kyoto as the "top city" while Osaka's statistics is put in relation to it, where it only achieves 11.39%. The average percentage number of the factors within an infrastructure is representative for each infrastructure and is collected in Table 2. For this

normalization technique in Informational City research see also Murugadas et al. (2015).

For the exploration of the employment and the entrepreneurial status of each city we collected data concerning the per capita income, the total amount of workers as well as the ratio of entrepreneurs.

In order to estimate the correlations between each investigated infrastructure and the entrepreneurial activity, we applied the Pearson correlation coefficient, as it is "the most commonly used type of correlation in statistics" (Schumacker 2014, p. 344). A calculated correlation in an interval from -1.0 and +1.0 is possible while a coefficient of 0.0 reveals that there is absolutely no correlation, a result of 0.2 (or -0.2) indicates that there is a weak relationship and 0.9 (or -0.9) demonstrates a strong connection. In this sense the Pearson correlation coefficient "serves as a measure of association" which "reflects the strength of the relationship between variables" (O'Rourke et al. 2005, p. 120). For example, let us assume we would like to know if there is a correlation between the number of inhabitants and the number of cars in the investigated cities. This method shows if the relationship between the results from Tokyo is similar to those from the other nine cities, and, whether the amount of cars relative to the size of the city's population is indeed related. A result of 0.0 would indicate that there is no pattern or correlation, and the number of inhabitants has no influence on the quantity of vehicles, while a coefficient of 0.9 would reveal a strong affiliation. For our results we will calculate the coefficients up until the third decimal place in order to highlight the weakness or significance of a result. Besides, this way the impact of results with equal first or second decimal places can be differentiated.

The collected data is shown in Table 1 (population, per capita income, employees and entrepreneurs in each city) and Table 2 (aggregated data for the four investigated infrastructures in each city). We were able to estimate if there are any correlations between our measures of the four infrastructures (as the distinct identity of a given city) and the entrepreneurial activity by using the before mentioned method. Every possible Pearson correlation coefficient between the categories is presented in Table 3.

Table 1: *Population (2012), per capita income (2012, in Euros, currency exchange rate from July 15, 2014) and entrepreneurial activities in each city (2012)*

City	Population	Per capita income	Workers	Entrepreneurs	Rate of Entrepreneurs
Tokyo	8,966,679	29,260.18	5,120,700	425,300	8.31%
Osaka	2,670,579	23,583.15	1,371,600	135,200	9.86%
Kyoto	1,473,416	21,536.53	727,800	80,200	11.02%
Hiroshima	1,177,711	22,845.5	592,200	50,800	8.58%
Kawasaki	1,430,773	27,560.69	781,800	55,900	7.15%

City				
Nagoya	2,266,517	23,850.73	1,194,100	79,500	6.66%
Sapporo	1,921,935	18,036.3	934,600	57,600	6.16%
Fukuoka	1,479,433	22,541.76	765,300	61,500	8.04%
Yokohama	3,691,693	22,035.53	1,915,800	106,900	5.58%
Kobe	1,544,496	21,326.81	719,200	55,600	7.73%

Source: http://www.city.yokohama.lg.jp/ex/stat/index2.html
Note: we used the Google Translator in order to be able to navigate through this website

Table 2: *The average percentage numbers of the four infrastructures (2012, per 1000 inhabitants)*

City	Knowledge	Creative	Digital	Smart
Tokyo	67.259%	73.758%	72.524%	53.530%
Osaka	43.492%	65.968%	54.238%	42.791%
Kyoto	79.067%	57.573%	66.090%	46.247%
Hiroshima	36.958%	61.407%	72.633%	49.223%
Kawasaki	20.877%	37.812%	43.662%	53.456%
Nagoya	36.882%	51.905%	70.186%	41.975%
Sapporo	40.576%	56.131%	65.198%	84.891%
Fukuoka	38.932%	58.673%	71.764%	55.579%
Yokohama	18.546%	35.542%	47.534%	45.760%
Kobe	38.736%	40.577%	85.223%	66.390%

Source: http://www.city.yokohama.lg.jp/ex/stat/index2.html
Note: we used the Google Translator in order to be able to navigate through this website

3 Results and Discussion

In this section we outline the outcomes of the applied correlations. Firstly, we present all the resulting correlations, and secondly, we analyze the correlations with respect to the entrepreneurial activity in the city.

Table 3*: Collection of all Pearson Correlation Coefficients Key: DI, SI, KI and CI = Digital, Smart, Knowledge and Creative Infrastructure (per 1000 inhabitants PCI = Per capita income*

	Popul.	DI	SI	KI	CI	PCI	Workers	Rate o. Entrepr
Popul.		0.038	-0.103	0.346	0.451	0.605	0.999	-0.052
DI	0.038		0.288	0.433	0.345	-0.206	0.041	0.198
SI	-0.103	0.288		-0.053	-0.077	-0.473	-0.110	-0.363
KI	0.346	0.433	-0.053		0.682	0.077	0.352	0.741
CI	0.451	0.345	-0.077	0.682		0.213	0.461	0.558
PCI	0.605	-0.206	-0.473	0.077	0.213		0.630	0.118
Workers	0.999	0.041	-0.110	0.352	0.461	0.630		-0.041
Rate o. Entrepr.	-0.052	0.198	-0.363	0.741	0.558	0.118	-0.041	

Source: own calculations

3.1 Overall results

For each measure of the four infrastructures we calculated the average percentage number relative to the population size of each city (per 1000 inhabitants). While the creative and the knowledge infrastructure have a mediocre correlation with the population number (0.451 and 0.346), the digital (0.038) and the smart infrastructure (-0.103) reveal almost nonexistent correlations. These numbers demonstrate that the population size associates more with the creative and the knowledge infrastructures than with the digital and the smart ones. The coefficients for the associations with the per capita income also give us a mixed insight on the various correlations: only the number for the smart infrastructure shows a hint of having a correlation (-0.473) while the other three infrastructures do not seem to correlate or show a very low association (creative: 0.213, digital: -0.206 and knowledge: 0.077).

In addition, the coefficients between the various infrastructures reveal rather weak associations. Only the correlation between the knowledge and the creative infrastructure shows a proper connection (0.682) while the other combinations of numbers illustrate moderate (0.433 on knowledge infrastructure with digital infrastructure) or poor coefficients (digital/creative: 0.345, smart/digital: 0.288, smart/knowledge: -0.053 and smart/creative: -0.077).

3.2 Correlations with regard to entrepreneurial activity

The rates of entrepreneurs in the investigated cities differ noticeably. Yokohama exhibits the lowest rate with 5.58% and Kyoto surpasses the other cities

with a rate of 11.02% (see Table 1). The correlation coefficients central to our investigation are those concerning the rate of entrepreneurs combined with the other categories.

The correlation between the rate of entrepreneurs and the population number illustrates that there is no connection whatsoever (-0.052). In addition, observing the Pearson coefficient of the entrepreneurial rate with the per capita income, both do not seem to influence each other either (0.118). The lowest coefficient regarding the rate of entrepreneurs combined with the numbers of the four examined infrastructures is calculated with the digital infrastructure (only 0.198) whereas the smart infrastructure reveals a slightly better correlation (-0.363), while still being rather humble. On the other hand, the creative and the knowledge infrastructures seem to correlate with the rate of entrepreneurs in a way: the creative infrastructure shows a better result with a coefficient of 0.558 while the knowledge infrastructure exhibits the highest correlation with the entrepreneurial activity (0.741). This outcome shows that the number of universities, libraries etc. might have an influence on the entrepreneurial activity in the investigated ten Japanese cities.

In result, we can state that the entrepreneurial activity is illustrating a mixed picture of its correlations with the four selected infrastructures of Japan's informational cities. Comparing the rate of entrepreneurs with the numbers of the four infrastructures, the knowledge infrastructure reveals the biggest correlation with 0.741. This indicates that a proper knowledge infrastructure indeed has a certain influence on the entrepreneurial activity in a city. With this in view, a closer look on the data of each city confirms this hypothesis: while the city with the highest rate of entrepreneurs (Kyoto with 11.02%) also has the highest rate concerning the knowledge infrastructure per 1000 inhabitants (over 99), the city with the lowest rate of entrepreneurs (Yokohama with 5.58%) shows a much lower number with respect to the rate of the knowledge infrastructure (only ~24).

4 Conclusion and future work

The first challenge during our research was to quantify the culture of a city. By collecting numbers of institutions, entertainment facilities, knowledge output etc. we were able to compare the different cities based on the calculated values for each infrastructure (which in turn characterize the distinct "culture" of the city—digital, smart, and knowledge- or culture-driven). The second challenge was to find a correlation between these two aspects – the culture (or identity) of a city and the entrepreneurial activity. Indeed, there are a few interconnections between the different infrastructures as well as between the infrastructures and the entrepreneurship. Nevertheless, our focus was on the research of the entrepreneurial activity where the rate of entrepreneurs correlates mediocre at best. Only the coefficient between the relative numbers of the amount of entrepreneurs and the knowledge infrastructure reveals a proper correlation and therefore it indicates that the number of universities, libraries etc. might indeed have an influence on the entrepreneurial activity in the cities.

In order to obtain more exact and more profound results, in our future work we will extend the applied categories in order to describe the cities' identities more precisely as well as increase the amount of investigated cities within Japan and worldwide in order to provide more clarity in terms of entrepreneurial activity in Japan.

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Finance support of regional and local television

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Abstract

Purpose of the article: In this article, the authors focus on the fact that local and regional media in the Slovak Republic do not have sufficient funding due to their territorial impact, which is not sufficiently stimulating for the advertisers. Methodology: Authors used the method of analyzing the available data of selected local and regional TVs, taking into account the size of the territory in terms of the number of inhabitants of the territory to which the broadcasting of local and regional televisions is broadcast. They also used a comparison method when comparing organizations representing local and regional televisions in the Slovak Republic and the Czech Republic. Scientific objective: This article emphasizes the importance of the independence of local and regional televisions that do not have financial support from central authorities and are thus dependent on the decision of local municipalities, thus creating a role in the public interest program. From the point of view of the use of marketing communication tools, it is not possible to compete with multi-regional televisions because TV production has the same price for both types of television but the range is different. Findings: In the Slovak Republic and in the Czech Republic, central authorities have not yet created a system of support for local and regional media to ensure their independence. The organizations representing these televisions even have a contradictory opinion in the Czech Republic on the financing of local and regional TVs from concession fees. In the Slovak Republic, the efforts of the central authorities to support these televisions have been demonstrated, but the form is unclear until that time. Efforts of local and regional TVs to get more advertisement are less real, as advertisers prefer multi-regional televisions. Conclusion: This article highlights the weakness of the use of marketing communications tools for local and regional TVs due to their small market presence. Regional and local television and the organizations that represent them strive to obtain financial support from central authorities so that they are not dependent on specific municipalities to form public programs and can form an independent program.

Introduction

Local and regional televisions companies in Slovakia have more than 20 years tradition. In 1994 were only 2 televisions companies which received licencing for local broadcasting. From 1997 to 2001, the largest development took place in the Slovak media space. For example, in 2001 13 companies received the licence for broadcasting for the same numbers of regions. In 2010 it was 80 licences (Graňáková, 2010). It may seem that the development of local and regional TV has taken the right direction. Regarding the number of licenses granted, this can be confirmed. If we talk about the successes of local television, they have seen development in their quality, but not in financial support. Regional and local televisions operate on the Slovak media market under the same conditions as multiregional televisions.

Multiregional TV broadcasters are generally funded by advertising revenue, local and regional televisions use this fact only marginally. The key sources of funding for local TV broadcasters involved in the survey are resources from municipal budgets, only three televisions report that municipal subsidies are not dependent, advertising revenue is typically 10-20% of the budget of the television, funds received from sponsors are used very little, the contributions from the funds are drawn by only one television. The main content of the media products of local and regional televisions are news and publicity programs and advertising. Advertising has a stable space of 23 broadcasters (Hradiská, Bohunický, 2016). The reason is seemingly simple. Investment in advertising is healthy only if it produces an effect. So while multi-regional televisions hit large audiences, the calculation of investment in ad production and the impact of mass media exposure is a direct cause. Conversely, in local and regional media, investment in advertising production is the same as in multiregional televisions, but the effect of audience intervention is an indirect intent. Of course, if prices for broadcasting were compared, supraregional televisions have different prices than regional and local. Nonetheless, local and regional

1 Methodology

The authors used the method of analyzing the available data of selected local and regional TVs, taking into account the size of the territory in terms of the number of inhabitants of the territory to which the broadcasting of local and regional televisions is broadcast. They also used a comparison method when comparing organizations representing local and regional televisions in the Slovak Republic and the Czech Republic

2 Theoretical background

Moran (1950) and Geary (1954) are often cited as the founding fathers of spatial econometrics, yet the actual framework for contemporary applied spatial analysis was provided through introducing a flexible spatial weights specification, as in Cliff and Ord (1969, 1981 and subsequent publications). Fujita *et al*. (1999) provide a comprehensive theoretical background of the so called Economic Geography, which emphasizes the importance of spatial spillovers between economies and focuses on economic convergence models. Practical aspects of W matrix construction, along with model specification and estimation topics within the R software environment are covered by Bivand (2015).

Also, spatial regression models have been extended to encompass the time dynamics aspects of the geo-coded variables and their interdependencies. Elhorst (2014) provides an advanced yet concise textbook on modern spatial panel data methods, while Baltagi *et al*. (2012) and Fingleton (2014) published papers with applied analyses and forecasts based on spatial panel data models; they also provide many additional references to relevant literature.

3 Theoretical background

Visual information is a key factor in media exposure. Simultaneously with the mechanisms that generate the meaning of the text, the medium acts as iconic content recovery generator as a whole on the recipient side (Valček, 2011). Television makes an enormous impact. According to Eurobarometer surveys, which track lifestyle trends across Europe, more than seventy percent of the population regard TV as their primary source of information. So far, the internet has made little impression on the popularity of television, though I suspect that will change in coming years (Thompson, 2010). The accuracy of McLuhan's observations 40 years ago about the power of TV has been compounded by the rise of the Internet and the World Wide Web (WWW). Ironically, with all of the various information resources available today, people often read superficially or listen with only one ear to a TV report (Whitaker, Ramsey, Smith, 2004).

Regional and local TV broadcasts are broadcasts associated with the territory of regions and localities. The content of the site is dominated by the problems of the region - district, region, localities. It proceeds from the etymological perception of the region and the locality. This media subsystem becomes the most dynamic and growing segment of the media market. Regional and local media have an information, orientation, and integration function. The integration function of local and regional media is most prominent. Everyday life is felt by citizens on the regional and local level. The integration function is based on the attractiveness that is based on the proximity of the issue of which the media inform the citizen. The psychological rule is that what the event is closer to the recipient, the more interesting is the news about it (Tušer, Kamenská Kresák, 2014). Regional TV, as well as a regional studio, is a separate organizational and economic unit capable of separately broadcasting and

producing television programs broadcast on a separate broadcast channel (Halada, Osvaldová, 2017).

The development of television broadcasting in Slovakia after 1989, following the change of regime, had a major role as a mind-setting medium. The aim was to allow television news to objectively inform the public about events. Another important task was to create legal guarantees that would exclude the state monopoly information and the legal conditions for the creation of a dual media system with public and private media. This later allowed the emergence of new local and regional media (Rusnák a kol., 2010).

4 The importance of regional and local

Local TV broadcasters have a significant impact on the development of the region and its identity if its broadcasts capture the essential aspects of the site's performance. In Europe, local television has a growing tendency. Local televisions have an important communication function, enabling citizens to take part in deciding local issues. Citizens enter the program as respondents, but also as initiators of news stories, can present their views. Local television broadcasting contributes to better mutual awareness among citizens and local authorities, to greater citizen participation in public affairs and thus to the development of democracy at a local level (Kuczmannová, 2011).

"*Local communication is a basic component of the functioning of a local community, the form of the participation in a social, political, cultural, economic life. The elements of local communication are senders, their communications and recipients. Local communication occurs in a social environment which consists of the components of at least three systems – political, cultural and socio-economic. The political system involves such bodies as local authorities, political parties, non-governmental organisations, local interest groups, all realizing their tasks. The cultural system is based on values and behaviour patterns, customs and traditions, forms and ways of participating in a social, political, and cultural life – all this creates the image of a community, its identity, and it indicates the degree of development and integration*" (Maćkowska, 2006).

Local broadcasters are important because they enable citizens to take part in decision-making on local issues. Broadcasters map all areas of social life and cover the interests and needs of the population of the territory in which they operate. Television is regional for content, not for technical reach. It contributes to the development of the region, the program focuses on the essential aspects of the process in the given city or region.
For whom is useful regional television?

a) For citizens/residents of the region

It activates the citizen in his participation in the administration of public affairs, enables citizens to participate in decision-making on local affairs.
It fosters local and regional identity and has an integrative function. as it contributes to the preservation of cultural traditions and sense of belonging to the region.

Significantly contributes to democratization - just to enable the citizen

to participate in their creation, because they are accessible to him and informally close to him.

It is a factor in preserving and expanding media pluralism.

b) Communal politicians gives the opportunity to present their views in an attractive audiovisual form. It also helps them in their ability to stand before the cameras - they may be useful when they are in national politics.

c) Provides an application to top professionals.

For commercial TV, he is often already forty-five years old. Regional TV creators see self-realization and want to share their experiences. It is surprising that there is a great interest from national TV professionals in the smaller and freer community of regional television.

d) Involves media creators for this country.

TV broadcasters from smaller locations send talented editors and technicians to regional televisions of larger cities and, over time, download them as a catalogue, national television. They know that a regional TV person has versatile skills, good working habits and sovereignty over the camera.

e) It builds an audiovisual space because, despite limited income, it produces various low-budget formats and documentaries. It again helps commercial competition, because it shows that program formats can be produced more efficiently (RegionTVnet online).

4.1 Price of advertisement and other product

Speaking of over 20 years of tradition of local and regional television broadcasters, organizations representing this market segment - the first to be established by LOTOS in 1997 - have also emerged. LOTOS now unites 35 local and regional television broadcasters. This club of local and regional television has played an important role in history. He prepared professional events that educated editors, organized competitions and festivals of production, prepared useful handbooks for novice creators (Lotos, online). In the preamble of his mission, he has an independent dissemination of information, independence of broadcasting and the development of dual television broadcasting in Slovakia. LOTOS represents its members in their relations with state authorities, local authorities, organizations dealing with copyright protection, broadcasting of television signals and other subjects operating in the media field in the SR and abroad. It focuses on regular methodical and professional assistance to local TV workers in the form of training sessions and seminars. Every year he organizes a Slovak-wide tour of the creation of local TV in Slovakia under the name WORKSHOP. It coordinates co-production, distribution of broadcasts of joint programs and annually is a successful media project promoter in various organizations and funds (Bohunický, Chudinová, 2016).

Regional television is expected to prepare a professional program, a service for the public and is expected to be commercially successful. Many televisions are striving for it. The following table lists the essential data of selected TVs.

Table 1: *Pricelist of advertising and other products of regional and local TV*

Name of TV	Type	Time (sec)	Nmbr of repeat	Price
TV Bratislava	Ads spot	30´	-	60€
	Teleshopping	180´	1 time	60€
	Commercial interview	180-300´	10 times	500€
	Sponsoring	15´	32 times	360€
TV Ružinov	Ads spot	30´	10 per Day	30€
	Teleshopping	90´	5 per Day	90€
	Commercial interview	180´	5 per Day	250€
	Sponsoring	60´	-	50€
TV Prievidza	Ads spot	30´	7 times	83,52€
	Teleshopping	180´	4 per Day	31,87€
	Commercial interview	180´	4 per Day	31,87€
	Sponsoring	10´	-	7,97€
TV Pezinok	Ads spot	30´	4 per Day	50€
	Teleshopping	180´	-	132,78€
	Commercial interview	180´	-	132,78€
	Sponsoring	10´	1 per Day	40€
TV Liptov	Ads spot	30´	24 per Day	30€
	Teleshopping	-	-	-
	Commercial interview	180´	1 times	350€
	Sponsoring	10´	-	150€
TV Severka	Ads spot	30´	1 times	90€
	Teleshopping	60´	1 times	200€
	Commercial interview	180´	1 per Day	700/600€
	Sponsoring	10´	Agreement	300€
TV Banská Štiavnica	Ads spot	30´	6 per Day	69,99€
	Teleshopping	-	-	-
	Commercial interview	-	-	-
	Sponsoring	10´	42 per Week	29,99€

Source: processed according to official materials at websites of local and regional televisions

It is clear from the table that regional and local televisions cannot benefit from the money they get. The cost of producing spots is the same as for multiregional televisions, the reach of viewers, potential clients are much lower. Local and regional televisions cannot compete with commercial multi-regional televisions because the largest part of the program is a public-service program. Public service media are paid from concession fees and are therefore mainly broadcasting a program in the public interest. Local and regional TVs receive similar support only from towns and villages. This is the biggest problem. Cities and municipalities change their budgets each year and depend on the will of the mayor and the will of the deputies to decide whether or not to finance local television in a particular year. This is the biggest reason for the dependence of local and regional media. Depending on how the TV broadcasts, he gets support.

4.2 Representatives of regional and local televisions

For this reason, several organizations have emerged to defend the interests of local and regional televisions. In Slovakia, it is LOTOS, which was founded 20 years ago, or RegionTVnet, which was founded only two years ago. In the Czech Republic, for example, it is Czech Regio TV, which represents four regional TVs in the sale of national advertising (ihned.cz online).

In 2012, four regional televisions established the Regional Television Association (AKTV), whose primary mission is to promote and protect the rights and legitimate interests of its members regarding the operation and development of regional broadcasting operators. The chairman of the AKTV was elected director of the Prague Metropolitan Broadcasting, Jiří Němeček. The founding members of the AKTV were Metropol Television, which broadcasts in Prague and Central Bohemia, Polar Ostrava, GENUS PLUS in Liberec and VTV1 in East-Central Television. The Regional Television Association, according to the founders of regional televisions, is able to cooperate on trans-regional projects and gives room for program exchange. At the same time, he has the ambition to enter the legislative process with his comments on television broadcasting (mediaguru online).

The TV program, called regionalnitelevize.cz "mediates all regions of the Czech Republic and brings current news from all municipalities, towns and regions of the country about social, economic, cultural or sporting events. We provide space for every local or regional news television, which means that every area, city and municipality can present and deliver not only up-to-date information and attractions from everyday life but also the opportunities and offers of individual regions in the field of tourism and tourism. We currently work with more than 100 local, regional and internet televisions, and we broadcast almost 11,000 annual reports from Moravian, Czech and Silesian regions annually.

The motivation for the implementation of this project is, in particular, the fact that it is almost unrealistic for local television stations to penetrate into any broadcasting system with nationwide coverage, whether terrestrial or satellite broadcasting. The long-term viewing trend, based on hyperlocal and patriotism, has a unique dimension, as events in the immediate vicinity can be comfortably and

in one place monitored not only by those who live in the region but also by people who have moved from the region but are still it is connected"(regionalnitelevize online). The chairwoman of the Association of Regional and Local TV Associations Eva Stejskalová had even announced the ambition to reach the concession fees. On the contrary, the Association of Television Organizations is fundamentally opposed to efforts to concessionary fees (ihned.cz online).

In the Slovak Republic, the effort to reach concessionary fees has not yet been revealed, but in any case, there has been an attempt to obtain both financial and moral support from the Slovak Central Authorities. RegionTVnet has also organized a workshop on regional and local TV coverage with National Council members, has prepared a series of TV debates on the subject and is also pushing for new legislation under preparation at European Union level.

Table 2: *List of regional and local TV in the RegionTVnet*

Name of TV	Territory	Viewer-Ship	Availability	Programm	Own production
TV Bratislava	Bratislava and surroundings, about 600 000 inhabitants.	200,000 viewers (Audience survey)	Bratislava, part of SR, unlimited via the Internet DVB T, 26th channel - Bratislava and wider surroundings Cable distribution: UPC, Digislovakia, Swan - Bratislava IPTV: Slovak Telecom Magio - Whole Slovakia, Antik Telecom - Košice and its surroundings, DSI Data - Northern Slovakia Stream: Online Broadcasting on a Web Page.	Metro Today (30 min, every working day), Discussion program Discussion about the fifth (30 min, 2 times a week), Week in New Town (30 min, weekly), Rača magazine (15 min, two weeks), Petržalka 13, weekly), Korzo (15 min, two weeks), Petržalka spectrum (4x), City Council meeting, Lamač, Nové Mesto (monthly) lifestyle magazines: City Lady,	2500 minutes per month

				We've Visited, Bloggers, Detector.	
Mestská televízia Trnava	Trnava and its surroundings, 120 000 inhabitants.	40 000 viewers.	Trnava and the surrounding 20 municipalities MTT broadcasts in cable networks in the city of Trnava (about 12,000 households via UPC Analog), UPC Digital, DVB-T on the 49th Channel, Magio and Swan across Slovakia.	Short news (every other day, 1-3 min), Trnava magazine (Week 15 min), Cultural mosaic (1 month, 20 minutes), Discussion studio (1 weekly, 20 minutes) Sport (1-2 weekly coverage) (1 month, 20 minutes, commercial) and Chance to change, We bake with Monica, Street names, I love Trnava (interviews with celebrities 1-2 times a month), Bezbúdov (1 month, The journey around the world, Trnava do teho...	about 400 minutes a month.
TV Nitrička	Nitra (78 033), Topoľčany (26 421), Zlaté Moravce (11 855) and its surroundings - Nitra and	90,000 viewers (Audience survey)	Nitra, Topoľčany, Zlaté Moravce and municipalities in the Nitra Region, part of the population of the whole SR. DVB-T broadcasting - 36th channel, Nitra	News, Sports, Magazine, About people with people, occasional live broadcasts +	600 minutes, 150 news feeds per month.

	the surrounding area, about 300 000 inhabitants.		region, Magio, Fiber TV - whole SR, Swan, Slovanet, Antik Telekom. Stream: Online webcast.	programs from the archive.	
TV Zemplín	Michalovce (39,510), Humenné (34,186), Medzilaborce (67,03), V. Kapušany (9,235), Sečovce (8,352), K.Chlmec (7,621), Sobrance), Poprad (52,316), Košice (239,454), Snina (20,294), Stropkov (10,762), Svidnik (11,337), Trebišov (24,500). There are 560,438 inhabitants in the area where Zemplín TV has its reach.	50,000 inhabitants - estimate	DVB-T transmitters - Michalovce K-48 with a range up to 40 km, Košice K-41, Prešov K-41, Poprad K-28. MMDS transmitter from the village Hraň near Trebišov with a range of up to 50 km. IPTV: Antik Telecom (Košice, Trebišov, Humenné..	Reports from the East Presented programs: Sobranský Magazine, TV News Mistral, Greek Catholic Magazine, KSK Magazine (two weeks, all local TV Košice Region), Magazine PSK (monthly).	about 100 minutes / month The TV broadcasts a 120-minute program in a loop 24 hours a day.
TV Oravia	Námestovo, Tvrdošín, Dolný Kubín and the surrounding area, about 20 000 inhabitants.	6000 viewers (estimated)	DVB T Bobrov, DSI DATA	Orava today, Orava women, Legal counsel, Councils, Seven minutes with, Theme.	about 100 minutes per month.
TV Karpaty	Piešťany and surroundings, part of Trnava,	10,000 viewers (estimated)	DVB T, Piešťany, Trnava	News, Discussion, Opinions of the deputies, Piešťany in	about 100 minutes per month.

	about 60 000 inhabitants.			Pictures, Piešťany without make-up, Interview - personality, Where to go for vacation + downloaded reports.	
Hlohovská TV	Hlohovec and its surroundings, 45 000 inhabitants	10,000 viewers (estimated)	DVB T, 22 channel, UPC	News + downloaded programs	about 100 minutes per month The TV broadcasts the program in a loop 24 hours a day.
TV Moldava	Moldava nad Bodvou	-	City TV broadcasts UPC, S-Team and ANTIK operators at two-hour intervals in even hours throughout the day.	Television reflects news from the social, cultural and sporting events in Moldava nad Bodvou and the nearby region. Programs broadcast in the public interest, reach out to the general public. All sessions have two language mutations - Slovak and Hungarian.	-

Source: RegionTVnet

RegionTVnet is also preparing a conference on this topic next year in cooperation with universities.

5. Results and Interpretation

The president of this organization and also the CEO of the largest regional television in Slovakia TV Bratislava Mária Urlandová states that the regional televisions can actually only make their acquisition but are not able to finance

the whole program in the public interest from such sources. Paid programs are sent no more than 3-4 times per week, advertising is usually based on a barter agreement, so we will not stop funding. The other televisions have not more than 3 times per month, for example, TV Pezinok or TV Prievidza. And that's a problem.

Which arguments are in favour of regional advertising. Regional television has one huge advantage, namely regional targeting. An advertiser can only reach viewers from their neighbourhood, with greater affinity (the ratio of viewers of the given target audience to the entire TV population), and with greater and more frequent interference with the desired target audience. The benefits of TV regional advertising lie not only in the affordability but also in the targeted addressing of regional viewers on a powerful media that offers sound and images of regional news, magazines, and events focused on events at home.

Conclusions

Smaller televisions have loyal and active viewers, and advertising on these televisions is generally perceived better than advertising at nationwide stations, thanks to regional modulation or proximity to the viewer. This is very interesting for any company. If a businessperson decides for television advertising at a regional station, it should be certain and do not underestimate its effect. There is nothing worse than just trying this kind of communication. Then it's the money that's been thrown away. Marketing works everywhere anyway. The advertising cannot be tested, advertising must be done. When a businessman does not spend the whole year of marketing and then thinks that one week's TV advertising will cause him more sales, he usually burns himself, and then he blames us. Respectively, it can, and it often comes out, but it is never possible to predict some reasonable result of the campaign. I think that only successive communication can achieve the desired success (Vesecký, 2015).

In any case, any attempt to get enough advertising and advertising products for regional and local teleshopping has so far not shown that such advertising would be able to finance regional and local TVs. It is, therefore, a question of the coming months to take the central authorities to do their utmost to support local and regional televisions and to allow them to seek their support for their projects. They do not have such an option yet. The emergence of multiple organizations and associations is evidence that the situation is urgent and needs a solution in the short term. In favour of program independence, broadcast in the public interest by local and regional televisions.

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Manžment bezpečnosti malých a stredných podnikov

Security management of the small-sized and medium-sized enterprises

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Abstract

This article is focused on the security management of the small-sized and medium-sized enterprises. The security in these enterprises is a verry impotant question in the economic field. It is because of the activity of small-sized and medium-sized enterprises is one of the assumptions of economical growth. It makes it important as well for the enterprise as for the economy. Based on the graphical and logic analyses we analyse the security managent situation in the Slovak republic. The information basis is made from the data of the year 2016. In the article are used the security management legislative information of the European Union too. In the article are defined more conlusions. In the case of small-sized and medium-sized enterprises it is about the threat of hardware, inovations, development, atacks on system oft he employies, clouds (development of thies services) and the black market with the stolen informsation. In the case, that the institutions will not implement preventive measures of the data security, it is only the queastion of the time, when an incident commes. The slovak cybernetic security law and the european data security regulation avoid these incidents. It will be helfull for the security of the small-sized and medium-sized enterprises.

Keywords: Security management, small-sized enterpises, medium-sized enterprises, informations security, informations

JEL Classification: M15, M21

Úvod

Existencia malých a stredných podnikov je jedným zo základných predpokladov ekonomického rozvoja. Väčšina z týchto podnikov pri svojej poodnikateľskej a administratívnej činnosti využíva počítač a počíačové siete. Počítače a počítačové siete sú najčastejšie využívané na komunikáciu, v priemyselnej výrobe, veľkoobchode a sektore nehnuteľností. Najmenej sú využívané v administratíve, ubytovacích a stravovacích službách. Pri využíuvaní počítačov a počítačových sietí dochádza k možnosti zneužitia dôverných informácií. Je preto dôležité dbať o zabezpečenie bezpečnosti. Prevádzka informačných systémov je potrebná na zabezpečenie efektívnej činnosti organizácie. Z dôvodu celopodnikového charakteru je otázka bezpečnosti strategickým rozhodnutím, o ktorom by mal rozhodovať menežment podniku a stáva sa tak jedným z predmetov manmažérskej činnosti.

Popis prostredia

Veľkostnú kategorizáciu podnikov vymedzuje Odporúčanie Európskej komisie č. 2003/361/EC a Nariadenie EÚ č. 651/2014. Malé a stredné podniky (MSP) tvoria podnikateľské subjekty, ktoré zamestnávajú menej ako 250 osôb a ktorých ročný obrat nepresahuje 50 miliónov euro a/alebo celková ročná súvaha nepresahuje 43 miliónov EUR. V rámci kategórie MSP sa rozlišuje tri kategórie podnikov. Mikropodnik ako podnik, ktorý zamestnáva menej ako 10 osôb a ktorého ročný obrat a /alebo celková ročná súvaha nepresahuje 2 milióny EUR. Malý podnik ako podnik, ktorý zamestnáva menej ako 50 osôb a ktorého ročný obrat a /alebo celková ročná súvaha nepresahuje 10 miliónov EUR, Stredný podnik ako podnik, ktorý zamestnáva menej ako 250 osôb a ktorého ročný obrat nepresahuje 50 milión EUR a/alebo celková ročná súvaha nepresahuje 43 milión EUR.

Rozvoj malého a stredného podnikania je jedným zo základných predpokladov ekonomického rozvoja krajiny. Slovensko je v rámci EÚ v poradí treťou krajinou (Po Českej republike a Portugalsku) s najvyšším počtom malých a stredných podnikov v prepočte na 100 obyvateľov. Malé a stredné podniky na Slovensku tvoria 99,9 % podielu z celkového počtu podnikateľských subjektov (557 758). Poskytujú v podnikovej ekonomike pracovné príležitosti skoro trom štvrtinám aktívnej pracovnej sily (74,1 %). Viac ako polovicou pridanej hodnoty (52,7 %) vytvárajú MSP. Z celkového počtu aktívnych podnikateľských subjektov (557 122) bolo 97,1 % mikropodnikov, 2,3 % malých podnikov, 0,5 % stredných podnikov a 0,1 percent veľkých podnikov.
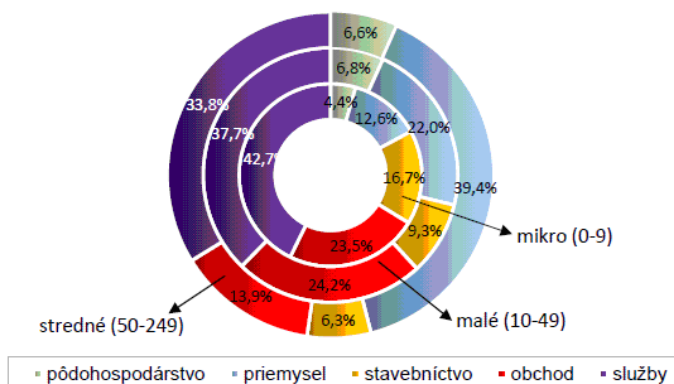
Graf 1 *Odvetvová štruktúra MSP podľa veľkostných kategórií v roku 2016*

Podľa prieskumu Štatistického úradu SR o využívaní informačných a komunikačných technológií v podnikoch využívalo v roku 2016 na Slovensku počítač a počítačové siete 84,3 % mikropodnikov. Malé podniky – ich podiel dosiahol 97,3 %. Počítač a počítačové siete používalo až 98,6 % stredných podnikov a 99,4 % veľkých podnikov. Využitie počítačov so zvyšujúcou veľkosťou podniku narastá. Je to spôsobené zložitejšou organizačnou štruktúrou a komplikovanejšími vnútropodnikovými procesmi. Počítače a počítačové siete sú najviac využívané v informačnom a komunikačnom sektore, priemyselnej výrobe, veľkoobchode a sektore nehnuteľností. Najmenej sú využívané v administratíve, ubytovacích a stravovacích službách. V rámci porovnania vekovej štruktúry slovenských podnikateľov s vybranými krajinami EÚ sa Slovensko vyznačuje vyšším zastúpením podnikateľov v mladších vekových skupinách.
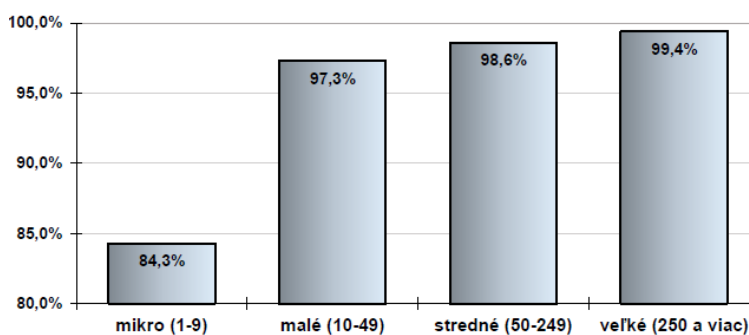
Graf 2 *Podiel podnikov používajúcich počítač a počítačové siete v roku 2016 (z celkového počtu podnikov v %)*

Jedna z najdôležitejších technologických oblastí, ktorá úzko súvisí s digitálnou transformáciou a bude v nasledujúcich desiatich rokoch stimulovať rast a inovácie, je internet. Takmer všetci používatelia počítačov využívajú aj internet. 49,3 % mikropodnikov s pripojením na internet v roku 2016 disponovalo vlastnou webovou stránkou, 79,4 % malých podnikov, 84,4 % stredných podnikov a 86,1 % veľkých podnikov. V roku 2016 má takmer polovica malých a stredných podnikov prevažnú časť svojich dokumentov v papierovej podobe. Počas ďalšieho roka však plánujú výrazný pokrok v digitalizácii: vyše 40 % podnikov očakáva, že budú zásadným spôsobom prevažovať digitálne dokumenty (IT ročenka 2016).
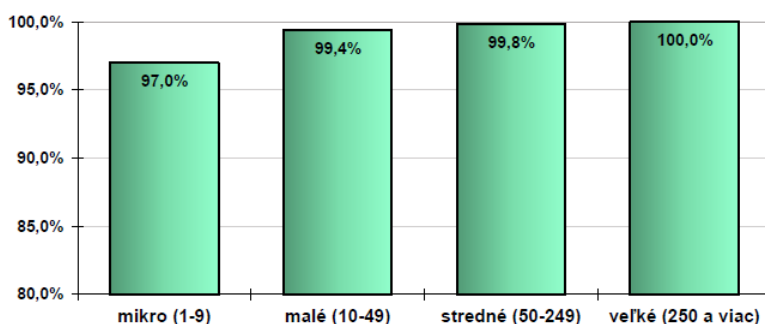
Graf 3 *Podiel podnikov používajúcich internet v roku 2016 (z podnikov, ktoré používajú PC, v %)*

Na nasledujúcom grafe je znázornený podiel podnikov predávajúcich a nakupujúcich on-line v roku 2016.
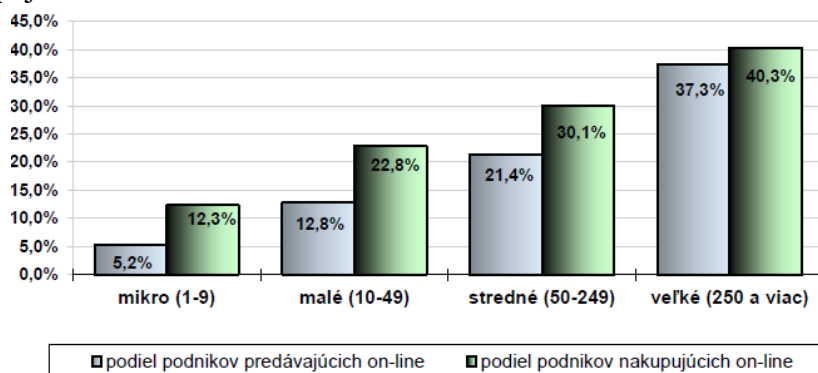
Graf 4 *Podiel podnikov predávajúcich a nakupujúcich online podľa veľkostných kategórií podnikov v roku 2016 (v %)*

IKT malých a stredných podnikov

Úlohou informačných a komunikačných technológií (IKT) v činnosti MSP je podporovať procesy, ktoré v ňom prebiehajú a zaznamenávať ich výsledky. Prevádzka informačných systémov je potrebná na zabezpečenie efektívnej činnosti organizácie. Skúsenosti ukazujú, že je žiaduce, aby prevádza IB podlieha priamo pod vedenie podniku a jej úspešnosť závisí od jeho podpory vedením podniku. Bezpečnosť prevádzky je špecifická zmysluplná činnosť, zameraná na odvrátenie alebo minimalizáciu bezpečnostných rizík, resp. bezpečnostných ohrození rôznej povahy a príčiny voči biznis procesom podniku. Bezpečnosť prevádzky IS zahrňuje prevenciu incidentov, servis a údržbu IKT. Prevencia incidentov sa dosahuje pomocou monitorovania a riadenia bezpečnostne relevantných udalostí. Vymedzenie krízového stavu je závislé od predmetu činnosti konkrétnej organizácie a taktiež kroky potrebné pre rýchlu obnovu systémov IKT sú špecifické vychádzajúce však z rovnakých princípov.

Typickou vlastnosťou MSP je, že si často neuvedomujú cenu svojich aktív. Ich disponibilné prostriedky použiteľné na ochranu informačných aktív, tvorbu a udržiavanie systému manažérstva informačnej bezpečnosti sú väčšinou obmedzené. V podnikoch často absentuje pracovník, ktorý by v rámci podniku riešil iba oblasť informačnej bezpečnosti. Je tomu tak v prípade mikropodnikov, ale aj malých a často aj stredne veľkých podnikov. Ako pomoc pri vývoji a udržiavaní nepretržitých harmonizačných programov by podniky mohli využiť štandardizované modely informačnej bezpečnosti.
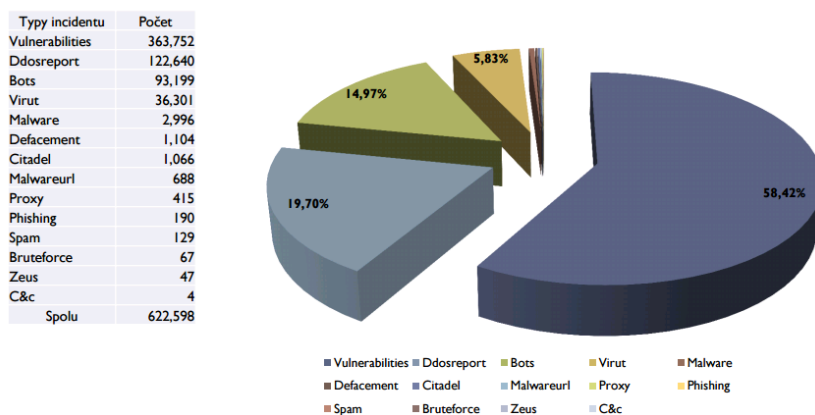
Aktíva a ich zraniteľnosť

Informačné aktíva sú všetky aktíva, ktoré obsahujú informácie potrebné na realizovanie podnikateľských aktivít. Aktíva MSP sú hmotné aktíva (počítačový hardvér, komunikačné vybavenie, budovy), informácie a údaje (dokumenty, databázy), softvér, schopnosť vyprodukovať produkt alebo službu, ľudské zdroje, nehmotné investície (dobré meno podniku). Z bezpečnostnej perspektívy nie je možné implementovať a udržiavať úspešný bezpečnostný program, ak nie sú aktíva organizácie jednoznačne identifikované. Akonáhle manažéri vedia, aké informačné zdroje potrebujú akú úroveň ochrany, môžu sa vyvíjať a implementovať základy bezpečnosti informácií. Základné informácie o bezpečnosti informácií predstavujú minimálne prijateľné zabezpečenie, ktoré by sa malo poskytnúť na ochranu informačných zdrojov. Základné línie sa líšia v závislosti od citlivosti a kritickosti aktív, konšraruje sa v (IT Governance Institute, 2006).

Aktíva podliehajú viacerým druhom hrozieb. Hrozba má potenciál spôsobiť nechcený dopad, ktorý môže mať za následok škodu v organizácii a jej aktívach. Veľkosť škôd spôsobených hrozbou sa môže značne líšiť od prípadu k prípadu. Zraniteľnosť aktív zahŕňa slabé stránky podniku v postupoch, personáli, riadení, administrácii, hardvérovom alebo softvérovom vybavení či v informáciách.

Riziko sa dá definovať ako potenciál, že daná hrozba využije zraniteľnosti na spôsobenie poškodenia aktíva. Bezpečnostná politika podniku je súhrn pravidiel pre prístup subjektov k informáciám a prostriedkom IS. Určuje spôsob, akým budú

vnútri IS distribuované, uchovávané, organizované a spracúvané nielen informácie, ale aj samotné prostriedky IKT. Bezpečnostná politika podniku je komplex personálnych, fyzických a organizačných bezpečnostných pravidiel a opatrení. Stanovuje predmet ochrany a špecifikuje možné hrozby a útoky. Pri analýze rizík je možné použiť rôzne nástroje na podporu analýzy rizík, ktoré sa líšia svojou zložitosťou aj licenčnou politikou (COBRA, CORAS , CRAMM, PTA – Practical Threat Analysis, RiskPAC).

Najväčšiu hrozbu pre aktíva MSP predstavuje internet a nelegálny softvér. Viac ako 95 percent každého veľkostného typu podnikov MSP, ktoré využívajú počítače, sú pripojené na internet. Bezpečnosť webových stránok a e-mailovej komunikácie malých a stredných podnikov je tak závislá na bezpečnosti poskytovateľa web hostingu, ktoré je veľmi rôzna. Zo všetkých nainštalovaných softvérov na Slovensku bolo v roku 2015 (IT ročenka, 2016) až 36 % nelegálnych a to aj napriek prepojeniu nelegálneho softvéru s kybernetickými útokmi. Tam, kde sa používa nelegálny softvér, dramaticky narastá pravdepodobnosť napadnutia počítača malvérom. V správe CEO sa uvádza, že mnohí IT správcovia v podnikoch v SR nepoznajú celý rozsah používaného softvéru na svojich systémoch, alebo či je softvér legálny. Rozsah zraniteľnosti MSP je ťažko odhadnúť. Mnohé z nich často ani nevedia o tom, že sa ich aktíva stali terčom útoku. I keď špecializovaný útvar CSIRT.SK na svojej webovej stránke každý mesiac uverejňuje prehľad kritických zraniteľností spolu s odporúčaniami na ich odstránenie. Popis zraniteľností pozostáva z jej opisu jej funkcionalít, určenia zraniteľných systémov a odporúčaní. MSP nemajú v prevažnej väčšine prípadov pracovníkov s požadovanou kvalifikáciu.

Typy incidentu	Počet
Vulnerabilities	363,752
Ddosreport	122,640
Bots	93,199
Virut	36,301
Malware	2,996
Defacement	1,104
Citadel	1,066
Malwareurl	688
Proxy	415
Phishing	190
Spam	129
Bruteforce	67
Zeus	47
C&c	4
Spolu	622,598

Graf 5 *Nahlásené bezpečnostné udalosti v IP adresnom priestore SR (2016 – unikátne IP adresy)*
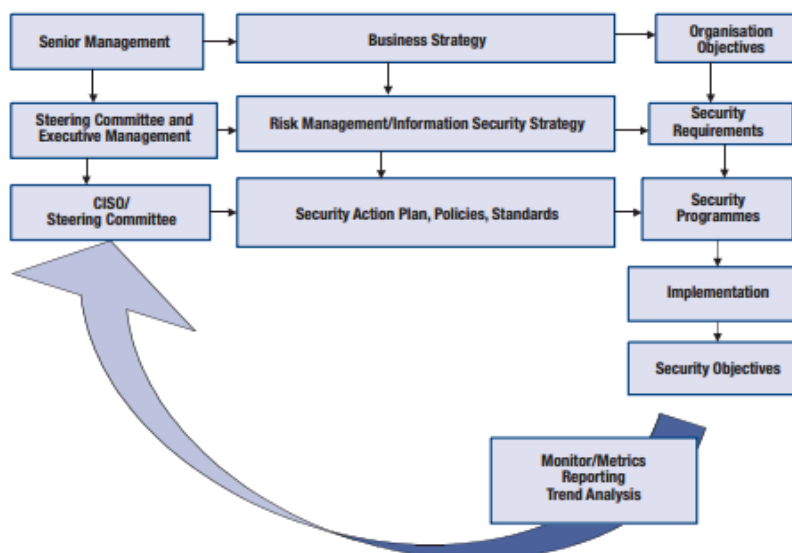
Princípy informačnej bezpečnosti

Bezpečnosť informačných technológií je informačná bezpečnosť definovaná ako bezpečnosť pri manipulácii s informáciami, predovšetkým vzhľadom na požiadavky na dôvernosť, integritu a dostupnosť informácií. Niektorí autori pridávajú aj požiadavky na zodpovednosť, autentickosť, a užitočnosť informácií, ktoré majú vplyv na hodnotenie bezpečnosti systému. Informačná bezpečnosť nie je iba otázkou ochrany pred úmyselným poškodzovaním atribútov aktív alebo ich odcudzením. Z praxe je známe, že za únik informácií z podniku až v 80 % prípadoch môže práve ľudský faktor; a iba 20 % predstavujú útoky zvonku. Informačná bezpečnosť sa netýka iba zabezpečenia informácií a informačných systémov, ale aj prístupu vedenia a vzdelávania zamestnancov vo firmách. Základné bezpečnostné pojmy a vzťahy medzi nimi sú na nasledujúcom obrázku 1. Konceptuálny rámec riadenia informačnej bezpečnosti je na obrázku 2.
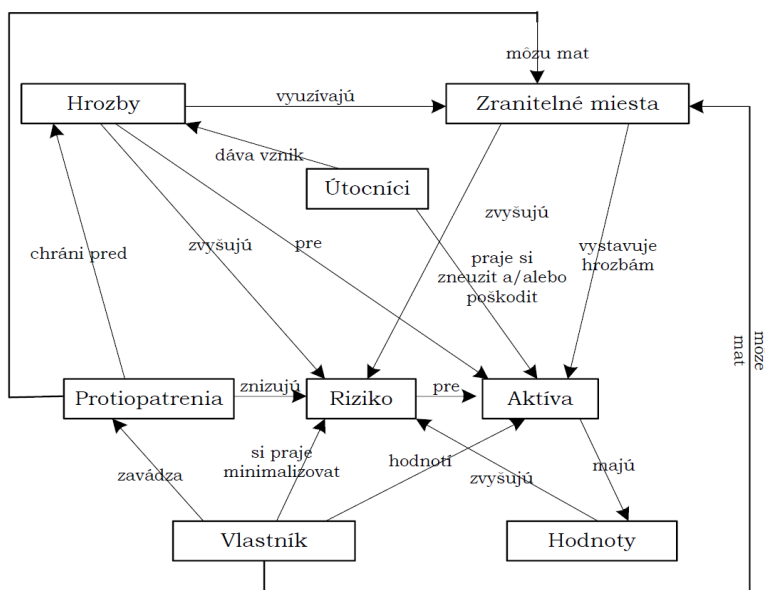
Zdroj: Chudá, 2013

Obrázok 1 *Základné bezpečnostné pojmy a vzťahy medzi nimi*

Obrázok 2 *Konceptuálny rámec riadenia informačnej bezpečnosti*

Východiská IB

Na zabezpečenie toho, aby boli pokryté všetky príslušné prvky informačnej bezpečnosti, bolo vytvorených viacero bezpečnostných štandardov. Existuje viacero štandardizácií organizácií – ISO, IEC, CEN, CENELEC, ETSI, NIST, BSI, DIN. Normami informačnej bezpečnosti sa zaoberajú aj súkromné spoločnosti, napríklad RSA Labs – PKCS. Normotvorné sú aj profesné združenia IETF – RFC.

Ideovým východiskom IB je deväť princípov OECD (OECD Guidelines for the Security of Information Systems and Networks: Towards a Culture of Security (1992, 2002, 2012)), ktoré sa navzájom dopĺňajú a tvoria celok. Vzťahujú sa na všetkých zainteresovaných – od vedenia podniku, cez informatikov po používateľov.

- Bezpečnostné povedomie. Zainteresovaní by si mali byť vedomí potreby informačnej bezpečnosti informačných systémov a sietí a toho, čo môžu spraviť pre zvýšenie úrovne bezpečnosti
- Zodpovednosť. Všetci zainteresovaní sú zodpovední za bezpečnosť informačných systémov a sietí.
- Reakcia. Zainteresovaní by mali rýchle reagovať a vzájomne spolupracovať pri prevencii, odhaľovaní a riešení bezpečnostných incidentov.
- Etika. Zainteresovaní by mali rešpektovať legitímne záujmy iných.
- Demokracia. Bezpečnosť informačných systémov a sietí by mala byť v súlade s podstatnými hodnotami demokratickej spoločnosti.
- Hodnotenie rizika. Zainteresovaní by mali vyhodnocovať riziká.

- Návrh a implementácia IB. Zainteresovaní by mali brať IB ako podstatný prvok informačných systémov a sietí
- Manažment bezpečnosti. Zainteresovaní by si mali osvojiť komplexný prístup k manažmentu IB.
- Prehodnocovanie. Zainteresovaní by mali revidovať a prehodnocovať IB informačných systémov a sietí a v prípade potreby robiť primerané úpravy existujúcich bezpečnostných politík, praktík, procedúr a opatrení OECD Guidelines for the Security of Information Systems and Networks je východiskom ISO noriem.

ISO/IEC normy sústavy 27000 predstavujú medzinárodné štandardy v oblasti riadenia informačnej bezpečnosti odvodené od britských štandardov rady BS 7799. V ISO je možné si všimnúť snahu vytvoriť komplexný podporný prostriedok pre informačnú bezpečnosť. STN neprevzala všetky ISO normy v oblasti riadenia informačnej bezpečnosti. Prevzaté sú nasledovné normy:

- STN ISO/IEC 27001 Systémy manažérstva informačnej bezpečnosti. Požiadavky. Táto medzinárodná norma pokrýva všetky typy organizácií (napr. komerčné spoločnosti, vládne agentúry, neziskové organizácie). Špecifikuje požiadavky na zriaďovanie, implementáciu, prevádzkovanie, monitorovanie, preskúmanie, udržiavanie a zlepšovanie zdokumentovaného systému manažérstva informačnej bezpečnosti (ISMS) v rámci organizácie na elimináciu celkových podnikateľských rizík. Podstatou štandardu je cyklický model PDCA (Plan-Do-Check-Act). Normatív riadenia informačnej bezpečnosti má v sebe zakomponovanú požiadavku na jasne deklarovanú podporu vedenia organizácie.
- STN ISO/IEC 27002 Pravidlá dobrej praxe praxe manažérstva informačnej bezpečnosti. Definuje pojmy ako dôvernosť, integrita, dostupnosť informácií v ovládacích prvkoch v komplexnom systéme riadenia (manažérstva) informačnej bezpečnosti. Táto medzinárodná norma zavádza usmernenia a všeobecné princípy na začatie, implementáciu, udržiavanie a zlepšovanie riadenia informačnej bezpečnosti v rámci organizácie
- TNI ISO/IEC TR 13335-3 TNI ISO/IEC TR 13335-4 Návod na manažérstvo bezpečnosti IT. Časť 3: Techniky pre manažment bezpečnosti IT a Časť 4: Výber bezpečnostných opatrení.

Z nových legislatívnych zmien, spomeňme aspoň dve najvýznamnejšie, ktoré podporia budovanie informačnej bezpečnosti v MSP.

V júli 2016 bola Európskym parlamentom schválená Smernica o opatreniach na zabezpečenie vysokej spoločnej úrovne bezpečnosti sietí a informačných systémov v Únii, tzv. smernica NIS, ktorá je prvým legislatívnym aktom riešiacim informačnú bezpečnosť v EÚ. Smernica nadobudla účinnosť v auguste 2016 a členské štáty majú od tohto času 21 mesiacov na to, aby ju transponovali do svojej národnej legislatívy. V novembri 2017 vláda Slovenskej republiky na svojom 76. zasadnutí schválila návrh zákona kybernetickej bezpečnosti a o zmene a doplnení niektorých zákonov z dielne Národného

bezpečnostného úradu. Cieľom návrhu zákona je vytvoriť funkčný legislatívny rámec, ktorý umožní efektívnu realizáciu kľúčových opatrení dôležitých pre bezpečnosť národného kybernetického priestoru, a zároveň transponuje do slovenského právneho poriadku priority a požiadavky európskej smernice o sieťovej a informačnej bezpečnosti (smernica NIS).

GDPR (General Data Protection Regulation) je európske nariadenie č. 2016/679, ktoré zavádza jednotné pravidlá v oblasti ochrany osobných údajov. Začne platiť od 25. 5. 2018 vo všetkých členských štátoch EÚ. Keďže k spracúvaniu osobných údajov dochádza v najrôznejších životných situáciách (monitoring kamerovým systémom, vedenie mzdovej a personálnej agendy, spracúvanie objednávok či reklamácií zákazníkov, vedenie evidencie o pacientoch, poskytovanie reklamných a marketingových služieb atď.), takmer každý podnikateľ by mal uvedenému nariadeniu venovať patričnú pozornosť. Okruh osobných údajov sa podľa GDPR rozšíri o údaje technického charakteru akými sú IP adresa alebo súbory cookies. Budú sprísnené podmienky pre spracúvanie osobných údajov osôb mladších ako 16 rokov. Podnikatelia, ktorí systematicky, pravidelne a vo veľkom rozsahu monitorujú dotknuté osoby (napr. pri retargetingu a rôznych formách behaviorálnej reklamy), musia podľa GDPR ustanoviť zodpovednú osobu (tzv. Data Protection Officer), ktorá bude mať na starosti kontrolu postupov pri spracúvaní osobných údajov, poskytovanie informácií či spoluprácu s Úradom na ochranu osobných údajov. Pokuty až 20 miliónov eur, resp. 4 % celosvetového ročného obratu boli v prípade GDPR nastavené dostatočne „motivačne" na to, aby dávalo zmysel venovať sa zabezpečeniu osobných údajov.

Záver

Ako postupuje svet technológií míľovými krokmi dopredu, objavujú sa nové výzvy a problémy v oblasti bezpečnosti. Podľa Horníka (2017) trendy informačnej bezpečnosti hovoria o tom, že zavádzanie inovácií vo firmách môže spôsobovať ich väčšiu zraniteľnosť. Podľa Intel Security sa dokonca v roku 2017 môžeme stretnúť s kybernetickými hrozbami. V prípade malých a stredných podnikov ide predovšetkým o hrozby zamerané na hardvér – inovácie, rozvoj, nové oblasti nasadenia, vydieračský malware, internet vecí (Priemysel 4.0), útoky prostredníctvom systémov pre zamestnancov, cloud (rozvoj využívania týchto služieb) a čierny trh s odcudzenými dátami. PC Revue (2017) upozorňuje, že bezpečnostné problémy a diery vyústia do závažných incidentov práve v menších a stredných podnikoch. Uvádza, že na základe prieskumu spoločnosti Safetica Technologies, ktorý zahŕňal 949 používateľov vo firmách, 87 % organizácií čelí problému zdieľania dôležitých dokumentov prostredníctvom nezašifrovaných externých médií. V 57 % firiem sú zamestnanci, ktorí zasielajú pracovné dokumenty na súkromný cloud, a v takmer každej firme (98 %) sa citlivé dáta posielajú v nezašifrovanej forme e-mailom. Je len otázkou času, kedy dôjde k incidentu - ak organizácie nezavedú preventívne opatrenia na ochranu dát. Zostáva len veriť, že pripravovaný zákon o kybernetickej bezpečnosti na Slovensku a regulácia o ochrane dát na európskej úrovni prinesú legislatívny rámec na budovanie bezpečnosti aj v malých a stredných podnikoch.

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