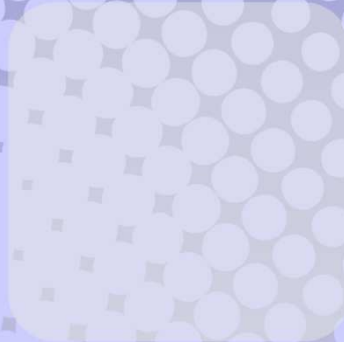


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MOVING FROM COGNITIVE LOYALTY TO BEHAVIORAL LOYALTY THROUGH BRAND ROMANCE: EVIDENCE FROM HOTEL INDUSTRY OF IRAN

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Abstract

Brand romance is considered as a very important construct in marketing especially in brand area leading to the occurrence of some behaviors in consumers. However, a few types of research have been conducted on the importance of brand romance in hoteling. The present research aims to identify and test the effect of brand romance on four kinds of customer loyalty including cognitive loyalty, affective loyalty, conative loyalty and behavioral loyalty. The semi-structured interview was used to identify the measuring tool of brand romance. Then, customer loyalty questionnaire was added and distributed in the statistical society of the study. Data were tested using Smart-Pls2. Results of the research showed that brand romance had positive and significant effect on four kinds of loyalty. This research is a guide for hotel managers and marketers to perceive brand romance from viewpoints of customers. In addition, by applying suggestions, the research will help marketers create a stronger relationship between brand and customers and thus benefit from its outcomes.

Keywords: brand romance, cognitive, affective, conative, behavioral, loyalty

INTRODUCTION

In recent years, researchers have paid special attention to feelings of consumer (Holbrook and Hirschman, 1982). According to researches of Ascher (1999), human beings (consumers) are seeking romantic relationship. Romantic relationship is not limited to males and females rather it is available between human and object, images and ideas. Bowlby was the first person who did a research on attachment based on the relationship between parents and neonates (1970, 1980). Similarly, researches on marketing show that consumers can attach to brands (Schouten & McAlexander, 1995). Such concept that reflects attachments and

romantic dependencies has been studied in researches on behavior of consumer (i.e. Shimp & Madden, 1988).

Fournier (1998) believed that consumers could make romantic relationships with brands and in some cases; such connections can be strong (Fournier, 1998). Brand romance is one of affective attachments that were presented by Patwardhan & Balasubramanian (2011) and it includes three dimensions of pleasure, arousal and dominance. Although brand romance of products is increasing, it has been less paid attention in services' industry especially hoteling in Iran. The present research aims to identify this gap and to answer following question: what effect does the brand romance have on kinds of customer loyalty in hotels?

Concerning the importance of brand romance, marketers in services & hoteling sector should perceive factors affecting brand romance. In products' sector, some researchers tried to do it. For example, Patwardhan & Balasubramanian (2011) indicated that the consequences of brand romance were attitude towards brand as a determinant and brand loyalty. Other researchers such as Kruger et al (2013), Patwardhan (2004) and Petzer et al (2014) studied determinants and consequences of brand romance. Kruger et al (2013) revealed that there was a significant relationship between attitude towards brand, trust, loyalty and brand romance. Petzer et al (2014) found brand loyalty as the consequence of brand romance. Patwardhan (2004) indicated that subjective brand knowledge, brand novelty and brand satiety are background factors for brand romance. In hoteling sector in Iran, most researches addressed the effect of brand equity on satisfaction and loyalty of customer and other related constructs. Rahimnia, Najafi, and Alavi (2014) indicated that brand preference had significant effect on brand attachment in Homa hotel in Iran. Given the country's prospect of attracting 20 million tourists by 2025, competition in the hotel industry will increase sharply, as even foreign companies are planning to enter this area. Therefore, brand, branding, and then building an emotional relationship with the brand will be one of the requirements of Iranian hotels in the future. Therefore, the present research aims to study the effect of brand romance on four kinds of loyalty including cognitive loyalty, affective loyalty, conative loyalty and behavioral loyalty as consequences of brand romance and qualitative and quantitative approaches have been used. The structure of paper has been organized as follows: first, the literature is studied; the model and hypotheses are codified in addition to description of brand romance. Then, results and conclusion are discussed.

Brand romance

Brand romance is an introverted subjective state in response to the brand as a stimulant and it is identified by following factors: positive strong sense to a brand, high arousal created by the

brand, tendency of the brand to dominance in cognitive mind of consumer (Patwardhan & Balasubramanian, 2011). Brand romance is appeared when the individual has knowledge on features of the stimulants that have been evaluated positively and he/she perceive some novelty in them thus the individual is encouraged to approach the stimulant. If the novelty is not perceived and the knowledge on the stimulant has been evaluated poorly or negatively, the tendency to approach the stimulant may be reduced. When the individual is satisfied with the stimulant, perceived novelty will be reduced. The brand romance is existent in the individual. Different individuals may experience various levels of brand romance (Patwardhan et al, 2004) because brand romance is a concept specific to an object.

Theoretical framework and hypotheses

Kruger (2013) concluded in his research that brand romance had positive and significant relationship with behavioral and attitudinal loyalties. Cognitive loyalty is based on beliefs in brand (Kumar Roy et al, 2009). Affective loyalty shows the favorable level of attitude and liking of customer to a brand. On the other hand, affective loyalty refers to the amount of consumer's liking of brand (Kumar Roy et al, 2009). Conative loyalty means to create behavioral intentions for buying a product. Such loyalty has deeper commitment. In other words, it refers to the level of customer's commitment to continuous purchase of a product in future. Conative loyalty states that attitudinal loyalty should be followed by liking to do something such as rebuying a brand. Such loyalty is stronger than affective loyalty. Conative loyalty refers to an intense tendency to a brand loyalty (Oliver, 1999). Researchers who did research on brand loyalty believed that commitment to brand and complete loyalty to the brand required existence of an affective and romantic attachment between consumer and the brand (Patwardhan & Balasubramanian, 2011; Oliver 1999). Therefore, concerning above-mentioned, it can be assumed that:

Hypothesis 1: brand romance has a positive effect on cognitive loyalty.

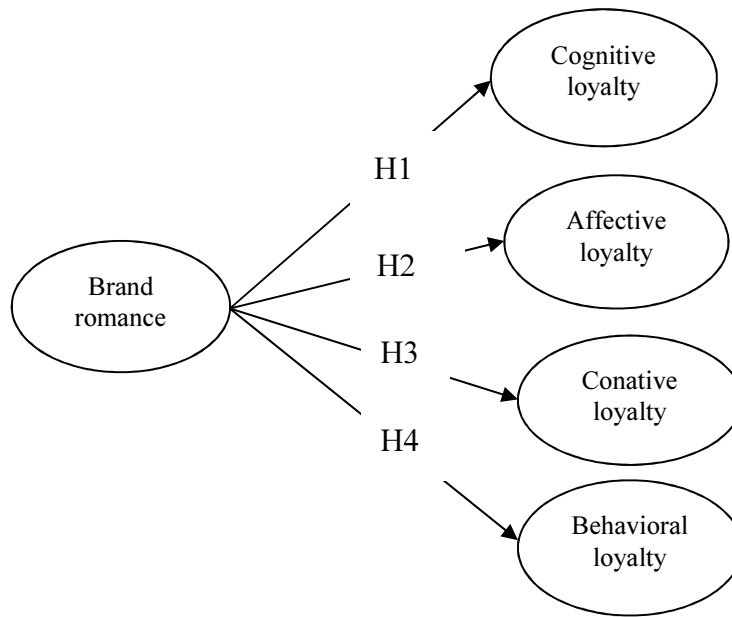
Hypothesis 2: brand romance has a positive effect on affective loyalty.

Hypothesis 3: brand romance has a positive effect on conative loyalty.

Oliver (1999) stated that behavioral loyalty is a state in which behavioral intentions change into practice (Kumay Roy et al, 2009). If a person attaches romantically a brand, he/she will tend to pay extra money for that brand. For this purpose, the consumer tends intensely to buy the brand. If the consumer is fond of a brand, it will be expected that positive statements are stated about the brand (Sarkar, 2011). Therefore, it can be assumed that:

Hypothesis 4: brand romance has a positive effect on behavioral loyalty.

Figure 1 Conceptual model of the study



METHODS

In this research, 48 consumers above 18 years old (18 males and 30 females aged between 18 and 50 years old) were interviewed using inductive approach. The consumers were asked to name the brand which they are fond of it. Then, some questions were asked about the reasons why they are fond of the brand and other feelings. After deep interview and analysis of over 367 minutes of interviews with consumers, 117 items were obtained using open and axial coding (8 constructs including: connections, arousal, dominance, passion, liking, intimacy, pleasure and uniqueness). In the next stage, content validity of the questions was studied using 11 doctorate students of marketing (in form of proper and improper). Then, content validity index of Lawshe (Lawshe, 1975) was calculated for each item (based on Lawshe table, optimal threshold amount for eleven specialists is 0.59). As a result, items in which Lawshe amount is lower than optimal threshold were removed and number of items was reduced to 80 ones. Concerning that such items have been specific to brands of products, to match items with service & hoteling sector, Lawshe index was used again to identify items appropriate for hoteling sector using the same specialists. As a result, 26 items were removed and 54 items remained to measure brand romance with a five point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Then, questions related to four loyalties (Yeboah-Asiamah, Quaye, & Nimako, 2016) were added and the questionnaire was distributed in the population under study and it was analyzed by Smart-PLS 2. Statistical population of the research is 4 and 5 star hotels in Mazandaran province-north of Iran because the brand is more tangible in such hotels. Concerning statistics obtained from cultural heritage & tourism organization of Mazandaran province, it was found that six 4-star hotels and one 5-star hotel were running in 2014 in the province. The 4-star hotels were Badleh, Salardareh and Navid

located as Sari, Narenjestan-e Noor and Parsian Khazar located at Chalous, Parsian Azadi (old) in Ramsar and Parsian Azadi Khazar (new) located at Ramsar was the 5-star hotel. Members of statistical population were customers of the hotels. To determine sample size, Krejcie-Morgan table was used thus 384 persons were chosen out of over 10000 persons. Therefore, 387 questionnaires were distributed in seven hotels based on random sampling and data were gathered.

DATA ANALYSIS AND RESULTS

Demographic analysis

Demographic features of the research showed that 34.8% of respondents were women and 65.2% were men. 21.6% of population under study were below 30 years old, 41.7% were between 30 and 50 years old, 36.7% were above 50 years old. Regarding education, 29.2% of people had bachelor or lower, 57% had master degree and 13.8% had doctorate degree.

Analysis of hypotheses/Evaluation of the measuring model

To test hypotheses, the external model should be evaluated. To study fitness of the measuring model, convergent validity and reliability were used. To measure convergent validity, factor loading and average variance extracted (AVE) were used. The result of factor loading of questions has been shown in Tab. 1.

Table 1 Confirmatory analysis of measurement model

Factors	Items	Factor loading (FL)
Connection	I feel happy for being interested in this brand.	0.522
	When I use this brand, I feel comfortable and relax.	0.626
	I try to increase my information about this brand to be able to defend this brand adequately if needed.	0.680
	This brand enhances my personality.	0.687
	I am dependent to this brand because I use it for long time.	0.635
Arousal	When I see this brand's advertising, I am encouraged to buy this brand's products.	0.203
	When I see this brand's advertising, I feel I made the right choice.	0.695
	When I see this brand's advertising, if someone was near me I will admire this brand.	0.618
	This brand is the only brand that has attracted me.	0.744
	When I see this brand's advertising, my desire increase to attain it.	0.770
	If I see the advertising of this brand's new product or service, I will follow it to attain more information.	0.693
	Good quality of this brand's services will make me to purchase of it in next purchases.	0.700
	When I see this brand's advertising, I feel good because I have or use its service or product.	0.717

Table 1 (continued)

Dominance	This brand is important and effective in everyday life of people.	0.702
	I always have a whim to use this brand's product and services.	0.742
	When not use this brand for some day, it is always in my mind.	0.637
Passion	Because of my interest in this brand, I am its fan.	0.777
	When I see this brand, I start to admire it.	0.808
	This brand is so attractive.	0.360
	I prefer this brand to others.	0.393
	When using this brand I feel there are lots of unknown things about it that make me to reach them.	0.347
	If this brand is absent, I am forced to move to other brands, but I do not feel good.	0.662
Liking	I have a particular interest in this brand	0.701
	When others say something bad about this brand, I ask the reason	0.549
	If this brand was absent or unavailable in market, it is difficult to get used to others.	0.822
	If this brand was absent or unavailable in market, it is difficult to choose others.	0.765
	If this brand was absent or unavailable in market, I cannot choose the right alternative.	0.834
	If I don't have this brand I feel dissatisfied.	0.815
	If I don't have this brand I feel worry.	0.791
	If this brand was unavailable, I feel sad.	0.698
	If in a meeting, people speak about this brand I will encourage them to buy this brand.	0.772
	If someone does not like this brand I would again insist on this brand.	0.635
	When I see this brand or its advertising, I feel happy because it is still popular and is available in market.	0.789
	If this brand was unavailable, I feel that other brands cannot satisfy my need and feel sorry.	0.672
	This brand is my first choice.	0.092
	When I want to purchase something new, this brand is my first choice.	0.376
	I have no bias to this brand.	0.408
	It does not matter this brand was available or not.	0.542
Intimacy	In a meeting when people speak about this brand, I try to say my usage experience of it.	0.319
	If this brand was absent in market, its absence may be feel.	0.979
Pleasure	This brand quality is high	0.599
	I am satisfied when I use this brand	0.083
	I feel good when using this brand	0.551
	I feel happy when I see this brand's advertising have this brand because I have it.	0.149
	When I use this brand, I feel happy: my choice is not wrong	0.703
	I feel good when using this brand because it has what I want	0.737
	When I see this brand I feel passionate.	0.731
	I have tried other brands, but I am not satisfied; this brand, however, has been very good	0.696
	When I use this brand I feel proud of it.	0.748

Table 1 (continued)

Uniqueness	This brand is very unique	0.899
	Everybody cannot provide this brand.	0.304
	This is a very special brand.	0.227
	This brand gives me special beauty.	0.248
	When I use this brand, I feel superior to other brands.	0.865

As seen in Tab. 1 in which results of confirmatory factor analysis have been shown for measuring convergent validity, factor loading of some questions is lower than optimal threshold of 0.3 thus it was removed and the model was reevaluated. As a result, after two stages of confirmatory factor analysis, 13 items were removed (out of 54 items) and 41 items remained and their factor loading is above optimal threshold. Therefore, the analysis continued. In addition, concerning the amount of average variance extracted (AVE) which is above 0.5, it can be stated that items can illustrate sufficiently variance of research variables. Composite reliability and Cronbach' alpha of variables are above 0.7 which are shown in Tab. 2. Thus, these criteria confirm proper fitness of the model. The final scale items are shown in Appendix.

Table 2 Reliability and validity of measurement model

factors	AVE	Cronbakh Alfa	CR
Connection	0.527	0.751	0.724
Arousal	0.518	0.882	0.882
Dominance	0.689	0.765	0.739
Passion	0.638	0.714	0.840
Liking	0.500	0.918	0.930
Intimacy	1.000	1.000	1.000
Pleasure	0.577	0.818	0.863
Uniqueness	0.808	0.764	0.894

Internal or structural model

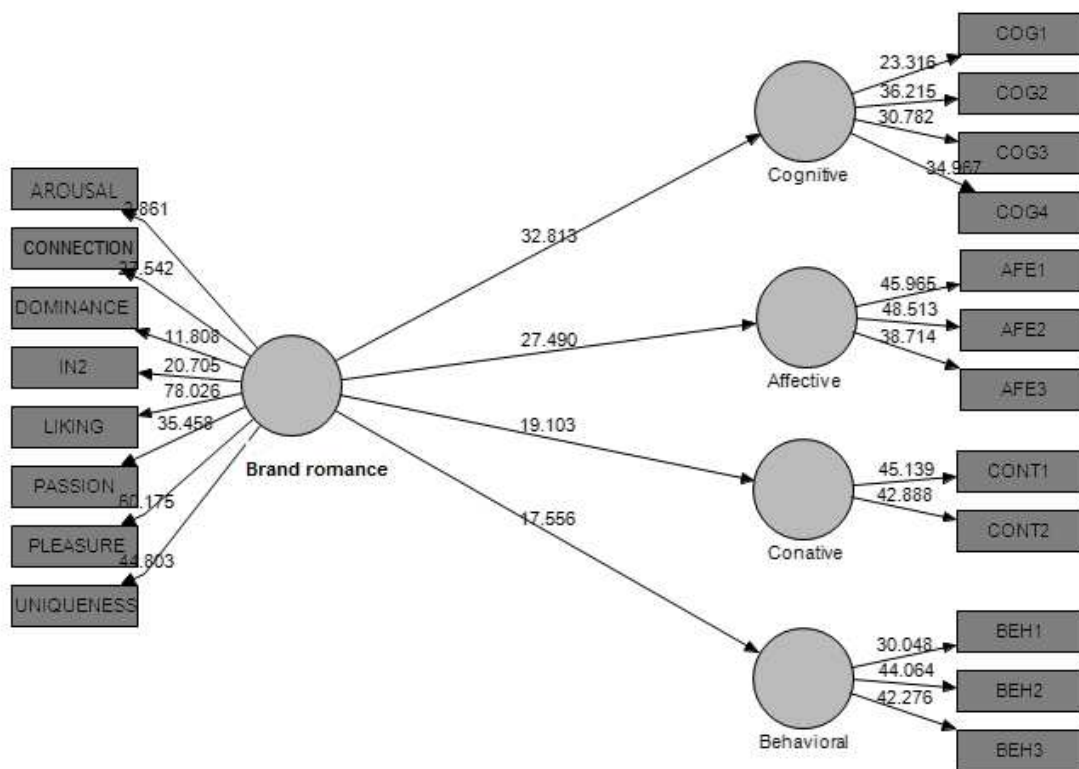
After testing external model, it is necessary to present internal model that shows the relation between research variables. The research hypotheses can be studied using internal model. Furthermore, before testing hypothesis, it is better to evaluate quality of internal or structural model. The quality of structural model means whether independent variables are able to predict dependent variables. In this case, construct cross validated redundancy called Q2 factor is used. If Q2 is positive, it can be concluded that structural model has a proper quality.

Table 3 Quality of internal or structural model

Total	SSO	SSE	1-SSE/SSO (Q2)
Affective	1161.000000	717.247824	0.382215
Behavioral	1161.000000	870.740688	0.250008
Cognitive	1548.000000	1015.855430	0.343763
Conative	774.000000	533.410658	0.310839

Concerning above table, since Q2 is positive, it can be concluded that structural model has a proper quality showing strong predictive power of the model about introverted construct and proper fitness of the structural model is confirmed. After fitting the measuring and structural models based on data analysis algorithm in PLS, the researcher is allowed to study research hypotheses and results.

Figure 2 General model of research (t-value)



To study significance level of the path factor, it is necessary to show t-value of each path. T-value of the test has been shown in Fig. 2. The coefficients should be above 1.96 to confirm their significance in confidence level of 95%. Summary of results has been shown in table 4.

Table 4 Path coefficients and testing results

Path	path coefficient	t value	result
brand romance → cognitive loyalty	0.759	32.813	confirmed
brand romance → affective loyalty	0.733	27.490	confirmed
brand romance → conative loyalty	0.653	19.103	confirmed
brand romance → behavioral loyalty	0.612	17.556	confirmed

Tab. 4 shows results of hypotheses in form of path coefficients with significance level related to research hypotheses. As seen in Tab. 4, the first hypothesis, the effect of brand romance on cognitive loyalty, is confirmed because path significant factor of these variables is 32.813 which is higher than 1.96 showing significant effect of brand romance on cognitive loyalty in confidence level of 95%. Thus, the hypothesis is confirmed. In other words, 75% of changes in cognitive loyalty are due to brand romance.

Significance coefficient of the effect of brand romance on affective loyalty is higher than optimal threshold (27.490). Therefore, such effect is significant and the hypothesis is confirmed. Since the path coefficient is positive, the effect is positive and significant and the size effect is 0.73. Therefore, the second hypothesis is confirmed.

Concerning significance coefficient of the effect of brand romance on conative loyalty (higher than optimal threshold (19.103)), such effect is significant. Since the path coefficient is positive, the effect is positive and significant. Therefore, it can be said that 65% of changes in conative loyalty are due to brand romance. As a result, the third hypothesis is confirmed.

Significance coefficient of the effect of brand romance on affective loyalty is higher than optimal threshold (17.556). Therefore, such effect is significant and the hypothesis is confirmed. Since the path coefficient is positive, the effect is positive and significant thus the effect size is 0.61. Therefore, the fourth hypothesis is confirmed.

DISCUSSION, COMPARISON AND CONCLUSION

The paper studied the effect of brand romance on customer loyalty in 4 and 5 star hotels of Mazandaran and a scale was presented. 4 and 5 star hotels were chosen because brand is more tangible in such hotels. First, a scale was prepared to measure brand romance by interviewing with consumers of goods. Then, opinions of experts were obtained to proportionate the scale with hotel and services. Consequently, confirmatory factor analysis was done on it and the effect of brand romance on four types of loyalty was tested. Generally, there is no discussion

and comparison for this subject because there is no literature about this area. But few foreign researches have been identified in this regard (Kruger et al, 2013; Patwardhan, 2004; Petzer et al, 2014) and results of the present research are consistent with their results. Results of current research proved that a brand romance between customers of the hotels and their brands may be significantly effective on customers' loyalties. Oliver (1999) identified four areas of loyalty. The first area is about the belief and cognition of customers. Being involved in belief and cognition of the customer and being the first rank in mind of the customer are important and critical points and it is recognized as the first stage of loyalty. Result of the research indicated that if brand romance was created in hotels, it could be effective on belief and cognition of hotel customers and it could remain in minds of customers. The name of hotel will be recorded in the mind of customer as the first brand. The second area is the sense and liking of customer to the brand. Affective loyalty is amount of liking of consumer to the brand (Kumar Roy et al, 2009). The result indicated that creation of brand romance between customers and hotels could lead to liking in long term. The third area is conative loyalty which is stronger than affective loyalty. Frequent reception of defective goods will reduce conative loyalty (Oliver, 1999). The fourth area is behavioral loyalty. It is a state by which behavioral intentions will change into practice (Kumar Roy et al, 2009). Results of the research showed that the romance between customers and brand of hotels could lead to attitudinal loyalty (cognitive, affective and conative loyalties) and such attitude could change into the practice as well thus behavioral loyalty was created in customers meaning purchase and revisit of hotel, introducing the hotel to friends, relatives, positive statements about the hotel. Therefore, concerning research results, followings can be suggested to the hotels:

- 1- The hotel managers should pay attention to brand and branding and brand identity
- 2- Determination of the level and amount of brand romance in hotels of Mazandaran for future measures. If amount of brand romance is low in hotels, it should be increased.
- 3- Concerning that brand romance is the most effective on cognitive loyalty, hotel managers should focus on this area and they should keep the name of brand (as a first place) in minds of customer and some measures should be taken to reach this goal.
- 4- Results of the research showed that brand romance is more effective on attitudinal loyalty of customers than behavioral loyalty. Therefore, it is necessary to take some measures in this direction such as making customers pleasant when using services and providing unique services in hotels.

The nature of the research and sample size may cause some problems for generalization of results. In addition, samples affected by the culture may cause similar problems. Another step in this direction is that backgrounds and consequences of brand romance are identified in hotels of the province then they are studied quantitatively. Quantitative research may show more issues such as the effect of identified factors and factors affecting brand romance. For example, service features have many dimensions and the most important dimensions can be identified as backgrounds.

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Appendix

Connection

I feel happy for being interested in this brand.

When I use this brand, I feel comfortable and relax.

I try to increase my information about this brand to be able to defend this brand adequately if needed.

This brand enhances my personality.

I am dependent to this brand because I use it for long time.

Arousal

When I see this brand's advertising, I am encouraged to buy this brand's products.

When I see this brand's advertising, I feel I made the right choice.

When I see this brand's advertising, if someone was near me I will admire this brand.

This brand is the only brand that has attracted me.

When I see this brand's advertising, my desire increase to attain it.

If I see the advertising of this brand's new product or service, I will follow it to attain more information.

Good quality of this brand's services will make me to purchase of it in next purchases.

When I see this brand's advertising, I feel good because I have or use its service or product.

Dominance

This brand is important and effective in everyday life of people.

I always have a whim to use this brand's product and services.

When not use this brand for some day, it is always in my mind.

Passion

Because of my interest in this brand, I am its fan.

When I see this brand, I start to admire it.

This brand is so attractive.

I prefer this brand to others.

When using this brand I feel there are lots of unknown things about it that make me to reach them.

If this brand is absent, I am forced to move to other brands, but I do not feel good.

Liking

I have a particular interest in this brand

When others say something bad about this brand, I ask the reason

If this brand was absent or unavailable in market, it is difficult to get used to others.

If this brand was absent or unavailable in market, it is difficult to choose others.

If this brand was absent or unavailable in market, I cannot choose the right alternative.

If I don't have this brand I feel dissatisfied.

If I don't have this brand I feel worry.

If this brand was unavailable, I feel sad.

If in a meeting, people speak about this brand I will encourage them to buy this brand.

If someone does not like this brand I would again insist on this brand.

When I see this brand or its advertising, I feel happy because it is still popular and is available in market.

If this brand was unavailable, I feel that other brands cannot satisfy my need and feel sorry.

This brand is my first choice.

When I want to purchase something new, this brand is my first choice.

I have no bias to this brand.

It does not matter this brand was available or not.

Intimacy

In a meeting when people speak about this brand, I try to say my usage experience of it.
If this brand was absent in market, its absence may be feel.

Pleasure

This brand quality is high
I am satisfied when I use this brand
I feel good when using this brand
I feel happy when I see this brand's advertising have this brand because I have it.
When I use this brand, I feel happy: my choice is not wrong
I feel good when using this brand because it has what I want
When I see this brand I feel passionate.
I have tried other brands, but I am not satisfied; this brand, however, has been very good
When I use this brand I feel proud of it.

Uniqueness

This brand is very unique
Everybody cannot provide this brand.
This is a very special brand.
This brand gives me special beauty.
When I use this brand, I feel superior to other brands.

REGIONAL DEVELOPMENT AND ITS MEASUREMENT IN VISEGRAD GROUP COUNTRIES

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Abstract

The aim of the paper is to measure regional development and construct an index for the Visegrad Group countries at NUTS 2 level. This index, called the Regional Development Index - the RDI - is created as an extension of the Human Development Index in order to obtain a better composed index at regional level. Twelve socio-economic indicators are selected for this purpose: three economic indicators, three educational indicators, three health variables and three indicators of the standard of living which create four dimensions. These variables are tested for their reliability through the pairwise correlation and the min-max method is used for the construction of the index. The data are compared between 2008 and 2013 and the assumption about worsening the situation in regions after the crisis is set. The results show that the values of the RDI improved in nearly all regions (with the exception of Prague in the Czech Republic and Közép-Magyarország in Hungary) in the monitored years. The assumption that regional development was negatively influenced by economic crisis has not been confirmed.

Keywords: Min-Max method, NUTS 2, Regional Development Index, Visegrad Group countries

INTRODUCTION

Regional or national development is usually measured by indicators such as domestic product, national income, or alternatively by the Human Development Index and the Index of Sustainable Economic Welfare or Gross National Happiness (Van den Bergh, 2009). While getting the data and setting of the above mentioned measurements at national level is not too complicated, the problem arises at the level of a region. Therefore, it is necessary to modify the measurements at this level and to find suitable socio-economic indicators which should contain adequate information. As Rován & Sambt (2003) claim, the socio-economic issue among regions should be of primary interest to economists as well as politicians and their differences should be maintained within the sustainable limits for the sake of the welfare of the country as a whole. The analysis of these indicators may serve as the basis for development policy at the regional level. The major distinction in most cases is the fact that

regions are open spatial entities (in contrast to countries), while the competence of a region may normally be superseded by the nations (Nijkamp & Abreu, 2009).

The aim of this paper is to construct a regional index for selected members of the European Union by the most often used measurement of human development, the HDI, and to compare this regional index in a period before and after the economic crisis. The countries of the Visegrad Group (hereafter V4) at the NUTS 2 level have been chosen for the analysis. This group includes 35 regions in the Czech Republic, Hungary, Poland and Slovakia – eight in the Czech Republic, seven in Hungary, sixteen in Poland and four in Slovakia. The data were obtained and compared for the years 2008 (before the crisis) and 2013 (after crisis). The assumptions that regional development was negatively influenced by economic crisis and the value of the RDI worsened between 2008 and 2013 were defined.

The Regional Development Index (hereafter the RDI) will be created as an extension of the HDI in order to obtain a better composed index at regional level. Thirteen socio-economic indicators will be selected for this purpose: three economic indicators (GDP per capita, R&D expenditure and unemployment), three educational indicators (tertiary educated population, people in lifelong learning and young people neither employed nor educated), three health variables (life expectancy at birth, health personnel – number of doctors and infant mortality) and four indicators of the standard of living (stock of vehicles i.e. – passenger cars, nights spent at tourist accommodation establishments, victims by accidents – killed and municipal waste). These variables will be tested for their reliability through the pairwise correlation and the RDI will be constructed using the min-max method after the selection of the correlated indicators.

Even though this paper is not the first attempt to study the development of (not only) the above mentioned socio-economic indicators, it differs from the existing studies in using more complex concepts of the given issue in the min-max method at the regional NUTS 2 level.

The paper is organized as follows: the second section presents a brief literature review, the third section describes the model and methodology used in the paper. Section four discusses the results in detail and the fifth section concludes the paper.

THEORETICAL BACKGROUND

The selection of indicators used in this paper was inspired by many studies in which the authors confirmed linkages among some indicators.

Firstly, the implementation of the GDP indicator was influenced by Sen's opinion (Sen, 1999) who considered the income (product) as a primary mean to achieve human development. The relationship between economic growth and unemployment is very well known according to Okun's law. A further indicator, research and development expenditure (R&D) and its increase is very important for increasing competitiveness (Bočková, 2013). Nevima & Kiszová (2011) claim that gross domestic expenditures on research and development are the sources for further economic growth. According to Hudec & Prochádzková (2015), the innovative capacity of a region can be considered as its ability to produce and commercialize innovations to drive a long-term economic growth and wealth creation. They examined the regions of the Visegrad countries by considering R&D expenditures by the concept of the knowledge production function (Cobb-Douglas type). The result was that not the capital regions are the most innovative ones, because several Polish regions (Lodzkie and Malopolskie) and Czech regions (Střední Morava and Jihovýchod) belong to the most efficient regions. Similar results were obtained by Kozuň-Cieślak (2016) who used the methods of the composite indicators and the DEA method.

Secondly, higher education and lifelong learning contribute to economic development as well. Florida, Mellander & Stolarick (2008) assert that human capital and the creative class affect regional development through different channels. Whilst the creative class outperforms conventional educational attainment for regional labour productivity, conventional human capital does better for regional income. Positive relation between tertiary graduates and economic growth in Visegrad countries was found in Verner & Chudarkova (2013) as well. The adult education systems (lifelong learning) currently in place tend to reinforce existing economic disparities, with greater frequency of re-skilling and up-skilling by more educated adults, with higher income levels (WEF, 2017).

Thirdly, Michaud & van Soest (2008) claim that in many industrialized countries there is a positive association between health and wealth and population; health tends to rise with the country's level of economic development (Semyonov et al. 2013). In addition, health improvements tend to reduce the mortality rates of infants (Bloom & Canning, 2003). Anand & Bärnighausen (2004) argue that a strong relevance between health personnel and infant mortality exists in more than 80 countries.

Fourthly, Riley (2002) examined the influence of population growth, increased urbanization and economic development on the rapid growth of motor vehicles in China. Medlock & Soligo (2002) did a research on the effect of economic development on the demand (numbers) of the motor vehicles in 28 countries and developed a model of the relationship between economic development and per capita private car ownership. A practical

example of relationship between economic development and an amount of vehicles is obvious with Toyota (Toyota, 2017): as the Japanese economy expanded (15% in the period of 1955-1970), the demand for passenger cars in particular grew rapidly, and the sales volume achieved an average annual growth rate of 32 percent. According to Tuan (2011), the gross regional product per capita in Thailand Provinces might have strongly exponential effects on car ownership. Shafik (1994) found out that increasing income indicates the waste generation deterioration. Eugenio-Martin et al. (2004) state that tourism provides two positive effects on economy: on one hand, an increase in production and income; on the other hand, as the tourism sector is labour intensive, it causes an increase in employment. It has certainly exerted a very important economic, productive, and cultural influence (Pérez and Nadal, 2005). Similarly, tourism plays an important role in solving economic and social problems, providing more jobs, initiating the employment growth of economically active population and increasing the welfare of a nation, and at the same time it has a stimulating effect on the development of many related fields of the economy – it contributes to socio-economic development (Gabdrakhmanov & Rubtsov, 2014). Borowy (2013) was dealing with road traffic injuries using the discourse analysis. He explored how development has been (re-)negotiated through the discourse of these injuries and *vice versa*. Gebru (2017) found that a road traffic accident is a human security threat with multifaceted effects on the economy of households and the national economies of states, especially in the developing countries. It affects the national economy of countries and households directly or indirectly because it causes a loss of the economically active population. According to Agbeboh & Osarumwense (2013) accidents cause heavy costs to society especially in case of a loss of able bodied men and women who would have been involved in productive economic activities as a loss of intellectuals, a loss of resources to government and families, a loss to insurance companies and a damage to properties. Road traffic injuries and deaths are a growing public health problems worldwide. Bantia et al. (2006) have shown that road traffic injuries are major causes of death and disability globally, with a disproportionate number occurring in developing countries.

The Human Development Index is primarily a nation level indicator, estimated for a country as a whole (Basu & Basu, 2005), but due to its general nature it cannot be applied by all economies in general. Therefore, many countries have introduced their own modified indexes in order to reflect their local circumstances better (Pagliani, 2010, or Gaye & Jha, 2010). Gnesi et al. (2010) have published the Index of the Regional Quality of Development (QUARS) with the aim of providing a multidimensional measure of the development of Italian regions, based on 41 individual indicators from different sources. The considered

dimensions are: Environment, Economy and labour, Rights and citizenship, Health, Education and culture, Equal opportunities, Participation. The composite index is equal to the arithmetic mean of seven macro-indicators, each of which corresponds to the mean of the standardized values of the indicators that compose it.

Some authors analysed human development at regional level using cluster analysis, as in the case of China between 1982 and 2003 (Yang & Hu, 2008) or in Kasim, Fron & Yaqub (2011) regarding the HDI of Iraq in 2006. They divided the regions of the aforementioned economies into four clusters. Akócsi, Bencze & Tóth (2012) analysed the Human Development Index of the Visegrad countries on the ground of knowledge (human) resources in the period of 2002-2007 and used 13 indicators for 35 regions according to an old methodology of the HDI measurement.

Majerova & Nevima (2017) made the cluster analysis with the modified Human Development Index (RNHDI) created for 46 regions of the Visegrad Group Plus countries (countries of the V4 and Slovenia and Austria) at the NUTS 2 level. They used the same methodology as by the HDI: three components were used – the health dimension (life expectancy at birth), the knowledge dimension (tertiary educated people and participation rate in education and training) and the dimension of living standard (GDP per capita in PPS). The authors defined the hypothesis about dynamization of regions (movement from lower to higher cluster/level of development), which was not confirmed.

The above mentioned authors (Nevima & Majerova, 2016) applied factor analysis of human development within the same group of countries as well. Their assumption that the most important factor of human development is economic level, measured by gross domestic product per capita, was not confirmed and was found that the most important role is played by another factor - life-long learning. This finding confirms that education of population is a very important variable of regional as well as national significance.

The closest research to the topic of this paper was done by Hardeman & Dijkstra (2014) who developed a composite indicator which was capable to measure patterns and trends in human development across the EU region in 2012. They chose (only) six reliable indicators out of 22 – healthy life expectancy, infant mortality, NEET, general tertiary education, net disposable income and employment rate, using the min-max model.

OBJECTIVES AND METHODS

This paper investigates the impact of economic crisis on regional development of all regions in the Visegrad Group countries. At first, a sample and variables (as a model) are described

and selected through pairwise correlation. Subsequently, they are used in the Regional Development Index by the min-max method (according to UNDP, 2016).

Model

The economic geography of Europe is characterised by wide levels of a number of socio-economic variables that are both a cause and a response to differences in growth and levels of income per capita (Fingleton, 2003). As it has already been mentioned, the Visegrad Group countries (V4) at the NUTS 2 level are analysed. There are 35 regions at this level – eight in the Czech Republic, seven in Hungary, sixteen in Poland and four in Slovakia. The list of the regions in our sample is shown in Table 1.

Table 1 The List of the Regions of the V4

Region	St. name	Region	St. name	Region	St. name
Praha	CZ01	Lódzkie	PL11	Bratislavský kraj	SK01
Střední Čechy	CZ02	Mazowieckie	PL12	Západné Slovensko	SK02
Jihozápad	CZ03	Malopolskie	PL21	Stredné Slovensko	SK03
	CZ04		PL22	Východné Slovensko	SK04
Severozápad		Slaskie			
Severovýchod	CZ05	Lubelskie	PL31		
Jihovýchod	CZ06	Podkarpackie	PL32		
Střední Morava	CZ07	Swietokrzyskie	PL33		
Moravskoslezsko	CZ08	Podlaskie	PL34		
		Wielkopolskie	PL41		
Közép-Magyarország	HU10	Zachodniopomorskie	PL42		
Közép-Dunántúl	HU21	Lubuskie	PL43		
Nyugat-Dunántúl	HU22	Dolnoslaskie	PL51		
Dél-Dunántúl	HU23	Opolskie	PL52		
Észak-Magyarország	HU31	Kujawsko-Pomorskie	PL61		
	HU32	Warminsko-Mazurskie	PL62		
Észak-Alföld					
Dél-Alföld	HU33	Pomorskie	PL63		

Source: Eurostat (2017)

As it has been noted, the annual data were obtained from the Eurostat regional database (Eurostat, 2017), which contains data for NUTS 1 to 3 regions. Not all the data are available for all regions of the EU and for each level of classification, so the selection of indicators was rather limited. For the purpose of this paper, thirteen regional socio-economic variables were chosen, the units, codes and relations of which can be found in Table 2. There are three economic indicators (GDP per capita, R&D expenditure and unemployment), three educational ones (tertiary educated population, proportion of people in lifelong learning and

young people neither employed nor in education), three health variables (life expectancy at birth, health personnel measured by the number of doctors and infant mortality) and four indicators of the standard of living (stock of vehicles measured by the number of passenger cars, nights spent at tourist accommodation establishments, victims killed by accidents and municipal waste). For the four indicators of standard of living, the three most suitable ones have been chosen. All variables are applied in the years before crisis (2008) and after crisis (2013), for the last year when the data of all the variables in all regions are available.

Since some variables have been listed in absolute values that are not suitable for constructing the composite index, they have to be recalculated and relative indicators are created, adjusting the values for the total population of the respective regions, see column “Unit”. Some of the variables are considered to have a positive impact on development and some of them negative. This assumption is tested in the following section and the direction is very important for choosing a proper method of measurement (see in the following part as well).

Table 2 Development indicators (units, codes and direction)

Indicator	Unit	Code	Impact
Gross domestic product	per capita in PPS	GDP	positive
Research and development expenditure	per capita in PPS	RDE	positive
Unemployment rate	% of total active population (age 25-64)	UNP	negative
Tertiary educated people	% of total active population	TEE	positive
Lifelong learning	% of total population	LLL	positive
Young people neither in employment nor in education and training	% of population (age 15-24)	NET	negative
Life expectancy at birth	years	LEB	positive
Health personnel	per 100 thousand inhabitants	HEP	positive
Infant mortality	numbers per 1000 live births	MRT	negative
Stock of vehicles (passenger cars)	per 1000 inhabitants	PSC	positive
Nights spent in tourist accommodation establishment	per 1000 inhabitants	NTS	positive
Victims of accidents	per Mio inhabitants	VOA	negative
Municipal waste	tones per capita	WST	negative

Source: authors' own processing

The first chosen variable is the **GDP per capita** (GDP). The per capita values reflect the economic level better than absolute values. In contrast to income of households, GDP per capita reflects the economic performance of all entities in the region, so it is more appropriate for the creation of a composite index. The indicator is measured by an artificial European

currency unit, the purchasing power standard (PPS). The price differences across countries and regions mean that different amounts of national currency units are needed for the same goods and services. The Purchasing Power Standard (PPS) is a fictive currency unit that removes differences in purchasing power, i.e. different price levels between countries. These parities are obtained as a weighted average of relative price ratios with respect to a homogeneous basket of goods and services, both comparable and representative for each country. Theoretically, one PPS can buy the same amount of goods and services in each country (Eurostat, 2014). The higher values of GDP per capita are associated with higher levels of development.

Intramural **R&D expenditures** (RDE) are all expenditures for R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds (OECD, 2002, p. 108). R&D is an activity involving significant transfers of resources among units, organisations and sectors and especially between government and other actors. The main disadvantage of expressing R&D input series in monetary terms is that they are affected by differences in price levels between countries and over time. It can be shown that current exchange rates often do not reflect the balance of R&D prices between countries and that in times of high inflation general price indices do not accurately reflect trends in the cost of performing R&D. The OECD (2002) recommends using purchasing power parities (PPP) and the implicit gross domestic product (GDP) for R&D statistics, although it is recognized that they reflect the opportunity cost of the resources devoted to R&D rather than the “real” amounts involved. For the purpose of this paper, relative indicator per capita in PPS was used. This indicator is positive for the regional development.

An indicator of **Unemployment** (UNP) by sex, and age in NUTS 2 regions represents all inhabitants aged 25 or over and is expressed as a percentage of active inhabitants in the age of 25-64 years. This age level was chosen to complement the age group used in the indicator NET, i. e. the age group between 15 and 24. This indicator (its high level) has negative effects on regional development, representing a social problem connected with negative effects on economic activities.

The share of **Tertiary educated people** (TEE) in the productive age population of the region is connected with the ability of people (and regions) to reflect the needs of knowledge of economy, and it also reflects the level of human development.

Lifelong learning (LLL) as the percentage of the regional population participating in education and training encompasses all learning activities undertaken throughout life (after the end of initial education) with the aim of improving knowledge, skills and competences, within personal, civic, social or employment-related perspectives (Eurostat, 2017). Due to

lifelong learning people extend their possibilities for increasing their incomes, well-being and development. These indicators' higher values are associated with higher levels of development.

The indicator **Young people neither employed nor in education or training (NET)** corresponds to the percentage of the total population of a given age group (15-24) that is not employed and not involved in further education or training. The age group was selected to complement the age range used for UNP to eliminate too high correlation or autocorrelation. This variable has a negative effect on development.

The **life expectancy at birth (LEB)** reflects the level of health and quality of life and it measures the qualitative aspects of living a healthy life. Its high values are associated with higher levels of human development – the higher the healthy life expectancy of a region, the more developed it is.

The higher values of number of health personnel are associated with higher levels of the economic development as well. **Health personnel** indicator (HEP) includes medical doctors that are active in the health care sector, irrespective of the sector of employment (i.e. whether they are independent, employed by a hospital or any other healthcare provider). The density rates are used to describe the *availability of this kind of medical staff and* expressed as their number per 100,000 inhabitants.

Infant mortality rate (MRT) reflects the number of deaths of children under one year of age per thousand live births. Regional differences in infant mortality may reflect the differences in wealth and spending of healthcare. In our research, the infant mortality rate can be a measure of the health and social condition of the region. It is a composite of a number of component rates, which have their separate relationship with various social factors and can often be seen as an indicator to measure the level of socio-economic diversity within regions.

The indicators of standard of living are stock of vehicles (cars), nights spent in a tourist establishment, amount of waste, and victims of accidents. In this paper, the **Stock of vehicles** represents the number of passenger cars (PSC)¹ per thousand inhabitants in the mentioned regions. *The* number of cars corresponds to the standard of living of the population in the direct proportion; therefore the development impact is positive.

The variable **Nights spent at tourist accommodation establishments (NST)** is calculated as total nights per thousand inhabitants spent by a guest, resident or a non-resident in a region.

¹Passenger car is presented by road motor vehicle, other than a moped or a motorcycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). Included are: passenger cars, includes micro cars (needing no permit to be driven), vans designed and used primarily for transport of passengers, taxis, hire cars (provided that they have fewer than ten seats), ambulances and motor homes. Excluded are light goods road vehicles, as well as motor-coaches and buses, and mini-buses/mini-coaches (Eurostat, 2017).

Tourist establishments are hotels and similar accommodation, holiday and other short-stay accommodation, camping grounds, recreational vehicle parks and trailer parks. As it has been mentioned, tourism (in this research the capacity utilization of tourist facilities) contributes to the development of a region.

The quantity of waste reflects the differences in economic wealth among regions – wealthier regions usually generate more municipal waste and have a negative impact not only on environment but on development as well. In this paper, **Municipal waste** (WST) expresses the total waste per inhabitant in tons and it consists of waste collected by the municipal authorities, or directly by the private sector (business or private non-profit institutions). The bulk of the waste stream originates from households, though similar wastes from sources such as commerce, offices, public institutions and selected municipal services are included as well. It also contains bulky waste, but excludes waste from municipal sewage networks and municipal construction and demolition waste (Eurostat, 2017).

The last but not least variable is the **Victims of accidents** (VOA) per million inhabitants of the region. For the purpose of our paper the persons killed (any person killed immediately or dying as a result of an injury accident², *with the exception of terrorist acts* and suicides), were selected, due to no possibility of their further positive contribution to enhance regional development (through consumption, higher education or lifelong learning etc.). This variable is chosen as a factor with a negative influence.

Methodology

The purpose of this paper is to construct a composite index of regional development using the min-max model (UNDP, 2016). A majority of the previous studies were devoted to analyses of other methods or a narrower range of this index, but a more comprehensive analysis is made in this paper.

Concerning the RDI index, not only the same method as the HDI construction was chosen (with minor deviations, see below), but also the same principle of its creation, i.e. – the component indicators should be assigned the same weight and divided into the relevant dimensions with a positive or negative influence on development. Suitability of selected indicators, weight and impact, was tested through the pairwise correlation analysis, namely

²Injury accident is any accident involving at least one road vehicle in motion on a public road or private road to which the public has a right of access, resulting in at least one injured or killed person. It includes *collisions between road vehicles; between road vehicles and pedestrians; between road vehicles and animals or fixed obstacles and with one road vehicle alone. Included are collisions between road and rail vehicles. Multi-vehicle collisions are counted as only one accident provided that any successive collisions happen within a very short time period. Injury accidents exclude accidents incurring only material damage* (Eurostat, 2017).

the Pearson correlation coefficient (UNDP, 2015 or Halásková & Mikušová Meričková, 2017).

When using equal weights, it may happen that – by combining variables highly correlated (above ± 0.90) – an element of double counting may be introduced into the index. In response to this problem the indicators are tested for statistical correlation – and then only those indicators are chosen which report a low degree of correlation (but more than $\pm 0.30^3$) or adjusting weights correspondingly, e.g. giving less weight to correlated indicators (OECD, 2002). The results of the pairwise correlation can be seen in Table 3, when both years (2008 and 2013) were tested.

Table 3 Correlation Matrix for 2008 and 2013

2008	<i>GDP</i>	<i>RDE</i>	<i>UNP</i>	<i>TEE</i>	<i>LLL</i>	<i>NET</i>	<i>LEB</i>	<i>HEP</i>	<i>MRT</i>	<i>PSC</i>	<i>NST</i>	<i>VOA</i>	<i>WST</i>
GDP	1												
RDE	0.8871	1											
UNP	-0.5513	-0.5330	1										
TEE	0.6113	0.6064	-0.3574	1									
LLL	0.7562	0.7380	-0.6356	0.3797	1								
NET	-0.5625	-0.5549	0.8727	-0.4049	-0.5948	1							
LEB	0.5155	0.5556	-0.7475	0.2680	0.7719	-0.7398	1						
HEP	0.9001	0.8078	-0.3533	0.5019	0.6583	-0.4051	-0.5446	1					
MRT	-0.5960	-0.5578	0.6890	-0.1401	-0.7166	0.5984	-0.0325	-0.4239	1				
PSC	0.2060	0.3110	-0.5794	0.1442	0.4778	-0.5391	0.5959	-0.1827	-0.3784	1			
NST	0.6026	0.6760	-0.2810	0.1897	0.5719	-0.2192	-0.6251	0.6352	-0.4937	0.3309	1		
VOA	-0.5110	-0.5239	0.0667	-0.1465	-0.2708	0.0533	-0.0712	-0.6369	0.1639	0.2463	-0.4666	1	
WST	-0.1062	-0.0880	-0.0287	0.0637	-0.1662	-0.0271	-0.5446	-0.0785	0.0528	0.1897	-0.1405	0.2736	1
2013	<i>GDP</i>	<i>RDE</i>	<i>UNP</i>	<i>TEE</i>	<i>LLL</i>	<i>NET</i>	<i>LEB</i>	<i>HEP</i>	<i>MRT</i>	<i>PSC</i>	<i>NST</i>	<i>VOA</i>	<i>WST</i>
GDP	1												
RDE	0.8921	1											
UNP	-0.5574	-0.6155	1										
TEE	0.7401	0.6343	-0.3662	1									
LLL	0.4107	0.5426	-0.5852	0.0792	1								
NET	-0.6295	-0.6565	0.7094	-0.4460	-0.6565	1							
LEB	0.5403	0.6488	-0.5477	0.4645	0.6701	-0.7186	1						
HEP	0.8323	0.8656	-0.3936	0.4900	0.4226	-0.4613	0.4125	1					
MRT	-0.5489	-0.5957	0.6860	-0.2981	-0.6783	0.7263	-0.7102	-0.4239	1				
PSC	0.1546	0.0519	-0.3144	0.3184	0.1753	-0.4396	0.4988	-0.1827	-0.3363	1			
NST	0.5501	0.6182	-0.4607	0.2626	0.3556	-0.3416	0.4004	0.6352	-0.3461	0.1231	1		
VOA	-0.5117	-0.5484	0.1537	-0.0708	-0.2595	0.0585	-0.1460	-0.6369	0.1942	0.3857	-0.4633	1	
WST	-0.0812	-0.1155	0.0866	0.0027	-0.1506	-0.0594	-0.2490	-0.0785	0.0456	0.2042	-0.1373	0.2723	1

Source: author's own

Note: all correlations are statistically significant at level $\alpha=0.05$

³ The values between 0 and ± 0.30 are considered as very weak, according to Moore et al. (2013).

As shown in the above table, the indicator of waste (WST) reported a very low value (less than ± 0.30) in both monitored years, so it does not correlate with any other indicators and has been excluded for further analysis. Even though the indicator VOA showed lower values of correlation in more than half of the cases, it has not been excluded from further analysis (because of higher value of the rest of indicators). Then, 12 indicators with the same weight were left, and four dimensions were created from these indicators, each with three indicators, two positive and one negative, according to the results of correlation (see Table 4).

Table 4 Development indicators (units, codes and direction)

Dimension	Indicators	Index
Economic	GDP (+)	EC
	RDE (+)	
	UNP (-)	
Education	TEE (+)	ED
	LLL (+)	
	NET (-)	
Health	LEB (+)	HE
	HEP (+)	
	MRT (-)	
Standard of living	PSC (+)	SL
	NST (+)	
	VOA (-)	

Source: author's own

The methodology of constructing a composite index follows the logic of the HDI calculation (UND, 2016 and Hardeman & Dijkstra, 2014). However, the calculation of the new index has to be modified. Firstly, the same values were not used due to the inclusion of minimum values from data corresponding to the low level of development in developing countries. For the higher perceived value of the created RDI index, data (min/max) corresponding to the comparability of the EU regions were selected. Secondly, the modification of the data was also based on the fact that the data used for creation of the HDI index are unavailable at the regional level (available only at national one).

According to the chosen method, it was necessary to define the minimum and maximum values for each indicator in the monitored years. To determine the minima, the worst results of individual indexes from all NUTS 2 regions of the European Union have been chosen, while for the maxima the best ones. One exception was made in case of the GDP per capita, where the second highest value was chosen. The reason for this was easy – the highest values of the GDP per capita are presented in the region of Luxembourg for both monitored years and these values are extremely high, more than 20,000 PPS higher than the second highest

value (Hamburg). So the values of the Hamburg region were determined as maxima. The values of indicators, regions and countries are shown in Tab. 5.

Table 5 The minimum and maximum values of indicators

Comp.	2008		2013	
	MIN	MAX	MIN	MAX
GDP	7,500 (Severozapaden, BUL)	52,600 (Hamburg, GE)	7,700 (Severozapaden, BUL)	54,500 (Hamburg, GE)
RDE	6.4 (Severen tseutralen, BUL)	1998.9 (Brabant Wallon, BE)	11.1 (Severen tseutralen, BUL)	3500.2 (Brabant Wallon, BE)
UNP	1.6 (Utrecht, NL)	15.8 (Andalucía, ES)	2.3 (Oberbayern, GE)	33.4 (Andalucía, ES)
TEE	6.7 (Sud-Mutenia, RO)	45.0 (Helsinki-Uusimaa, FIN)	11.4 (Sud-Mutenia, RO)	49.3 (Helsinki-Uusimaa, FIN)
LLL	0.8 (Notio Aigaio, GR)	34.3 (Hovestaden, DK)	0.9 (Severentsentralen, BUL)	35.4 (Hovestaden, DK)
NET	2.4 (Overijssel, NL)	27.1 (Campania, IT)	4.1 (Oberbayern, GE)	33.9 (Severozapaden, BL)
LEB	70.6 (Latvija)	82.3 (Marche, IT)	74.1 (Lietuva)	84.8 (Com. De Madrid, ES)
HEP	127.3 (Flevoland, NL)	831.5 (Attiki, GR)	132.3 (Flevoland, NL)	867.3 (Attiki, GR)
MRT	1.4 (Notio Aigaio, GR)	13 (Sud-Est, RO)	1.3 (Etela-Suomi, FI)	10.3 (Sud-Est, RO)
PSC	109 (Sud-Est, RO)	1,100 (Valle D'Aosta, IT)	167 (Sud-Est, RO)	1,051 (Valle D'Aosta, IT)
NST	450 (Nord-Est, RO)	48,691 (Tirol, AT)	487 (Nord-Est, RO)	62,552 (Notio Aigaio, GR)
VOA	16 (Wien, AT)	204 (Prov. Luxembourg, BE)	10 (Wien, AT)	159 (Alentejo, PT)

Source: Eurostat (2017)

To determine various indices, two types of calculations were used: index for variables with positive direction (1)

$$V_{index} = \frac{(V_{real} - V_{min})}{(V_{max} - V_{min})} \quad (1)$$

and index for variables with negative direction (2)

$$V_{index} = \frac{(V_{real} - V_{max})}{(V_{min} - V_{max})}, \quad (2)$$

where V_{index} is the respective value of the 12 component indicators, V_{real} is a real value, V_{min} is a minimum value and V_{max} is a maximum value. The values of the sub-indexes EC,

ED, HE and SL are calculated as the arithmetic means of the three component values of the dimension (3)

$$V_{s-i} = \frac{V_{i,1} + V_{i,2} + V_{i,3}}{3}. \quad (3)$$

The principle of the Regional Development Index is calculated as the geometric mean of all the above indices, as shown in (4)

$$RDI = \sqrt[4]{EL \cdot ED \cdot HE \cdot SL}. \quad (4)$$

The required data for calculations of the RDI are listed in the Appendix I and II, the values of the components are shown for the years 2008 and 2013. 2008 was the year before the crisis in the EU and 2013 is the year after it (for which the latest data are available for all the indicators and all the countries). Decreasing values of RDI within regions were expected in the monitored period.

RESULTS AND DISCUSSION

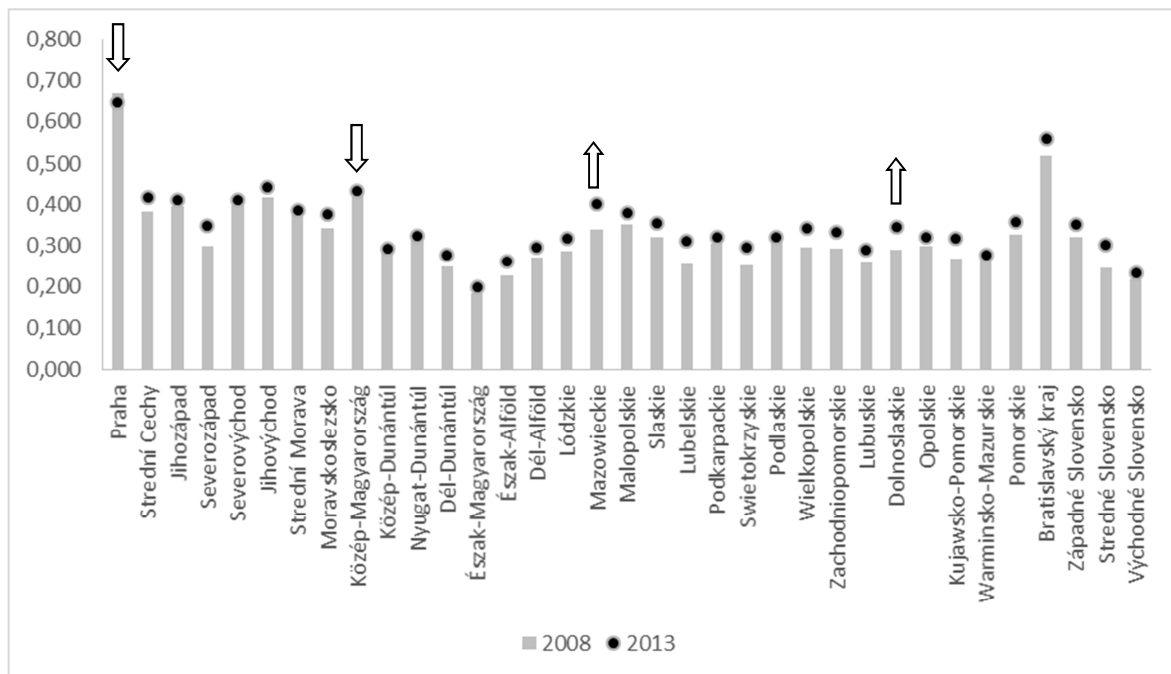
Four dimensions of regional development were used for the research – an economic index, an education index, a health index and a standard of living index. The component values of socio-economic indicators in the indexes were calculated as coefficients according to the min-max method with equal weights. These dimensions were then converted into the index RDI using a geometric mean. The sub-indexes and the composite index RDI are presented in Appendix I for the year 2008 and Appendix II for the year 2013.

The results are as follow: Firstly, the obtained values of the RDI are, with the exception of the regions of the capitals in the Czech Republic and Slovakia (Praha and Bratislavský kraj), very low taking into account the index interval of $\langle 0;1 \rangle$. The first mentioned region reached the value above 0.6 in both monitored years, the second region more than 0.5. The rest of the regions have the values from 0.183 (Észak-Magyarország in 2008) to 0.441 (Jihovýchod in 2013). Disparities exist not only among countries, but among regions of every country as well. The biggest differences were among the regions of Slovakia (the difference between the highest and the lowest value is greater than the index value for the least developed region), followed by the regions of the Czech Republic and Hungary. The most stable values of the

RDI were found in Poland, but here the capital region does not have an outstanding value either.

Secondly, if we observe the differences between years 2008 and 2013 (see Figure 1), we can see worsening of the index values in two regions - Praha and Közép-Magyarország (arrows pointing down), the value of the RDI remained the same or improved in the rest of the regions. The largest improvement of this index was recorded in the regions Mazowieckie and Dolnoslaskie (arrows pointing up), both in Poland. Generally, the regions of Poland achieved larger improvements from 2008 to 2013 than other regions of the V4 countries and no region worsened its position from the viewpoint of the regional human development.

Figure 1 RDI in the Visegrad Group in 2008 and 2013



Source: author's own

A comparison of the development of the RDI values from the perspective of individual economies is shown in Table 6. The highest values of the index were achieved in the regions with capitals in both monitored periods (with the exception of Poland in 2008, where the region around Krakow showed the best results). On the other hand, the border regions (with the exception of the region in central Poland in 2008) showed the lowest values of RDI index. The Czech Republic then achieved the best results, followed by Slovakia and Poland, the worst results on average achieved the Hungarian regions.

Looking at changes between 2008 and 2013, they are regionally different in the monitored economies – while the most developed border region in the Czech Republic improved most positively, the smallest change in the index was even negative. On the contrary, the smallest improvement showed the least advanced region in Slovakia, the highest improvement reached the Polish region with the capital. On average, the highest average change occurred Slovakia and Poland between 2008 and 2013, while Hungary improved the RDI index at least.

Table 6 The summary of RDI values by country and region

RDI values/Country	Czech Republic	Slovakia	Hungary	Poland
<i>2008</i>				
Highest RDI value	0.668 Praha	0.520 Bratislavský kraj	0.440 Közép-Magyarország	0.352 Malopolskie
Lowest RDI value	0.299 Severozápad	0.217 Východné slovensko	0.183 Észak-Magyarország	0.251 Swietokrzyskie
Average RDI value	0.412	0.326	0.284	0.295
<i>2013</i>				
Highest RDI value	0.646 Praha	0.558 Bratislavský kraj	0.432 Közép-Magyarország	0.402 Mazowieckie
Lowest RDI value	0.347 Severozápad	0.233 Východné Slovensko	0.200 Észak-Magyarország	0.275 Warminsko-Mazurskie
Average RDI value	0.429	0.361	0.297	0.330
<i>Change from 2008 to 2013 (RDI 2013-RDI 2008)</i>				
Highest change of RDI	0.048 Severozápad	0.055 Stredné Slovensko	0.034 Észak-Alföld	0.065 Mazowieckie
Lowest change of RDI	-0.006 Střední Morava	0.016 Východné Slovensko	0 Közép-Dunántúl, Nyugat-Dunántúl	0 Podlaskie
Average change of RDI	0.017	0.035	0.013	0.035

Source: own calculation

CONCLUSION

The aim of the paper was to construct a regional index for the Visegrad Group countries at NUTS 2 level. 35 regions of the Czech Republic, Hungary, Poland and Slovakia were chosen for this purpose. The data were obtained for the years 2008 (before the crisis) and 2013 (after the crisis).

The Regional Development Index, RDI, was built as an extension of the Human Development Index in order to obtain a more complex index at regional level. Therefore, twelve socio-economic indicators were selected: three economic indicators (GDP per capita,

R&D expenditure and unemployment), three educational (tertiary educated population, people in lifelong learning and young people neither employed nor in education), three health variables (life expectancy at birth, health personnel measured by number of doctors and infant mortality) and three indicators of the standard of living (stock of vehicles measured by passenger cars, nights spent at tourist accommodation establishments, and victims killed by accidents). These variables were tested for their reliability by pairwise correlation and then the RDI was constructed using the min-max method.

The results revealed huge disparities among countries and among regions. The most developed ones are two capital regions – in the Czech Republic (Prague) and in Slovakia (Bratislavský kraj), in contrast to the least developed regions Észak-Magyarország (Hungary) and Východné Slovensko (Slovakia). The values of the RDI improved between 2008 and 2013 in nearly all the regions (with the exception of Prague in the Czech Republic and Közép-Magyarország in Hungary). The assumptions that regional development was negatively influenced by economic crisis, and the value of the RDI worsened between 2008 and 2013, have not been confirmed.

The method of computation, namely, that minimum and maximum values used for the normalisation of data were defined based on all the NUTS 2 regions of the EU, make the computed RDI values of the V4 countries comparable to similarly computed RDI values of all NUTS 2 regions of the EU in the selected years.

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Appendix I Sub-indexes and Index RDI in 2008

Country (Region)/Index	EC	ED	HE	SL	RDI
<i>Czech Republic</i>					
Praha	0.787	0.648	0.785	0.496	0.668
Střední Čechy	0.450	0.412	0.501	0.230	0.383
Jihozápad	0.410	0.432	0.548	0.250	0.394
Severozápad	0.285	0.224	0.435	0.289	0.299
Severovýchod	0.382	0.399	0.540	0.305	0.398
Jihovýchod	0.404	0.449	0.591	0.284	0.418
Střední Morava	0.357	0.397	0.555	0.295	0.390
Moravskoslezsko	0.308	0.320	0.457	0.308	0.343
<i>Hungary</i>					
Közép-Magyarország	0.473	0.501	0.484	0.328	0.440
Közép-Dunántúl	0.319	0.354	0.303	0.215	0.293
Nyugat-Dunántúl	0.339	0.339	0.385	0.243	0.322
Dél-Dunántúl	0.192	0.234	0.387	0.224	0.250
Észak-Magyarország	0.117	0.208	0.166	0.279	0.183
Észak-Alföld	0.157	0.241	0.320	0.219	0.227
Dél-Alföld	0.227	0.336	0.298	0.232	0.270
<i>Poland</i>					
Lódzkie	0.291	0.393	0.327	0.177	0.285
Mazowieckie	0.402	0.512	0.411	0.153	0.337
Małopolskie	0.321	0.396	0.418	0.290	0.352
Śląskie	0.308	0.382	0.304	0.292	0.320
Lubelskie	0.227	0.380	0.332	0.149	0.256
Podkarpackie	0.238	0.351	0.395	0.258	0.304
Świętokrzyskie	0.234	0.375	0.381	0.120	0.251
Podlaskie	0.273	0.422	0.407	0.219	0.318
Wielkopolskie	0.315	0.381	0.338	0.190	0.296
Zachodniopomorskie	0.215	0.351	0.355	0.270	0.292
Lubuskie	0.275	0.306	0.324	0.162	0.258
Dolnośląskie	0.254	0.379	0.280	0.255	0.288
Opolskie	0.282	0.353	0.346	0.226	0.297
Kujawsko-Pomorskie	0.223	0.343	0.329	0.200	0.267
Warmińsko-Mazurskie	0.245	0.346	0.338	0.194	0.273
Pomorskie	0.314	0.384	0.369	0.253	0.326
<i>Slovakia</i>					
Bratislavský kraj	0.619	0.582	0.707	0.287	0.520
Západné Slovensko	0.319	0.314	0.398	0.267	0.321
Stredné Slovensko	0.157	0.275	0.378	0.223	0.245
Východné Slovensko	0.144	0.236	0.266	0.245	0.217

Source: author's own

Appendix II Sub-indexes and Index RDI in 2013

Country (Region)/Index	EC	ED	HE	SL	RDI
<i>Czech Republic</i>					
Praha	0.705	0.643	0.764	0.501	0.646
Střední Čechy	0.431	0.448	0.499	0.314	0.417
Jihozápad	0.421	0.436	0.509	0.300	0.409
Severozápad	0.335	0.292	0.420	0.351	0.347
Severovýchod	0.375	0.448	0.509	0.332	0.411
Jihovýchod	0.439	0.464	0.572	0.323	0.441
Střední Morava	0.373	0.384	0.476	0.320	0.384
Moravskoslezsko	0.357	0.402	0.445	0.309	0.375
<i>Hungary</i>					
Közép-Magyarország	0.465	0.460	0.476	0.342	0.432
Közép-Dunántúl	0.347	0.324	0.270	0.244	0.293
Nyugat-Dunántúl	0.371	0.310	0.348	0.268	0.322
Dél-Dunántúl	0.304	0.268	0.250	0.282	0.275
Észak-Magyarország	0.264	0.206	0.095	0.308	0.200
Észak-Alföld	0.262	0.244	0.305	0.237	0.261
Dél-Alföld	0.297	0.282	0.363	0.245	0.294
<i>Poland</i>					
Lódzkie	0.323	0.391	0.303	0.264	0.317
Mazowieckie	0.467	0.548	0.408	0.250	0.402
Malopolskie	0.340	0.414	0.424	0.342	0.378
Slaskie	0.356	0.406	0.307	0.349	0.353
Lubelskie	0.307	0.405	0.357	0.208	0.310
Podkarpackie	0.281	0.307	0.388	0.316	0.321
Swietokrzyskie	0.279	0.386	0.334	0.213	0.296
Podlaskie	0.310	0.427	0.359	0.217	0.318
Wielkopolskie	0.371	0.379	0.318	0.309	0.343
Zachodniopomorskie	0.327	0.340	0.327	0.336	0.332
Lubuskie	0.324	0.292	0.274	0.269	0.289
Dolnoslaskie	0.352	0.385	0.318	0.329	0.345
Opolskie	0.320	0.348	0.348	0.267	0.319
Kujawsko-Pomorskie	0.301	0.331	0.344	0.292	0.316
Warminsko-Mazurskie	0.292	0.299	0.266	0.247	0.275
Pomorskie	0.349	0.415	0.371	0.306	0.358
<i>Slovakia</i>					
Bratislavský kraj	0.664	0.571	0.683	0.375	0.558
Západné Slovensko	0.331	0.307	0.393	0.378	0.351
Stredné Slovensko	0.265	0.291	0.361	0.293	0.300
Východné Slovensko	0.232	0.268	0.181	0.262	0.233

Source: author's own

COLLISIONS OF ANIMALS WITH ROAD VEHICLES IN TRAFFIC IN THE CZECH REPUBLIC IN CONNECTION WITH TOURISM –

ANALYSES OF CAUSES AND PREVENTION

ANALÝZA PŘÍČIN A PREVENCE STŘETŮ ZVĚŘE S DOPRAVNÍMI PROSTŘEDKY V SILNIČNÍM PROVOZU V ČESKÉ REPUBLICCE VE VZTAHU K CESTOVNÍMU RUCHU

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Abstract

The paper analyses the collisions of animals with means of transport in road traffic in the entire territory of the Czech Republic in connection with tourism. The collisions were evaluated for the period from 2007 to 2016 under the different conditions in which they occurred, for example, season, time of day, weather conditions, visibility and the like. The development of the number of accidents in individual periods and the scope of damage in relation to the collisions are analysed in such a manner as to allow for comparison of any financial resources spent on prevention with damage that has already occurred.

The result is that highest number of accidents was recorded in 2016, the lowest in 2009. After 2008, the rate of accidents involving collisions with animals had a declining trend, but rapidly increased again from 2010. Another finding is that highest damage to property occurred in 2016 in the amount of €13,974,886, while the least was in 2009 in the amount of €4,225,879. If we focus on the health and safety of people, which is the highest priority of the research, we ascertained that in the period in question a total of 923 people were injured, of whom 5 people unfortunately died of their injury and other research results are shown in the text.

Keywords: wild game, collisions, roads, means of transport, traffic safety, prevention, safety precautions, tourism, destination(s)

Abstract

Práce se zabývá analýzou střetů zvěře s dopravními prostředky v silničním provozu na území celé České republiky ve vztahu k cestovnímu ruchu. Kolize byly vyhodnocovány za období od roku 2007 do roku 2016 a to za různých podmínek, ve kterých k nim docházelo jako např. roční období, denní doba, povětrnostní podmínky, viditelnost apod. Vývoj počtu nehod v jednotlivých obdobích a rozsahu škody v souvislosti se srážkami jsou analyzovány takovým způsobem, aby bylo možné porovnat případné vynaložení finančních prostředků do prevence, s již vzniklou škodou.

Výsledkem je, že nejvyšší počet nehod byl zaznamenán v roce 2016, a nejnižší v roce 2009. Po roce 2008 měla míra nehod s kolizemi se zvěří klesající trend, ale od roku 2010 se opět rychle zvýšila. Dalším zjištěním je, že k největším škodám na majetku došlo v roce 2016 ve výši 13 974 886 EUR, nejméně

v roce 2009 ve výši 4 225 259 EUR. Pokud se zaměříme na zdraví a bezpečnost lidí, což je nejvyšší prioritou výzkumu, zjistili jsme, že ve sledovaném období bylo zraněno celkem 923 osob, z nichž bohužel 5 osob zemřelo, další výsledky výzkumu jsou uvedeny v textu.

Keywords: zvěř, kolize, pozemní komunikace, dopravní prostředek, bezpečnost provozu, prevence, bezpečnostní opatření, turismus, destinace

INTRODUCTION

Road traffic density is continuously rising at such a rate that it is not possible to respond adequately and quickly to this problem. Road transport can generally be divided into freight and passenger transport; in passenger transport, the main reasons are business and recreational trips. In Europe, the major means of transport for individual recreation is the passenger car (75% in 2017), to a lesser extent bus and airplane. The journeys are mainly organised individually (80%), and only about 15% are purchased from travel agencies and operators (Palatková, Zichová, 2014). Individual passenger car tourism is a significant accident risk factor.

The ever increasing need to build all types of roads is not adequately considered and designed beforehand in such a manner as to ensure mainly the safety of the transported people and subsequently also to protect wild game and prevent fatal collisions. A significant role in safety is also landscaping, especially landscaping of highways and motorways (Anděl et al., 2006).

It is also necessary to consider the potential consequences of absolute isolation of animals by fencing and preventing their access to the road. On the other hand, when migration structures are used, there is still a risk of animal mortality. Both an adequate number of migration objects and fencing of the roads have their justification, and it is necessary to combine them very prudently considering both risks (Gorčicová, 2011).

The study focuses on a comparison of the accident rate in connection with the collisions of motor vehicles with game in the past, i.e. since 2007 for the reason that these events were not digitally recorded before this date and the data are practically unavailable at present. Since 2007, collisions and accidents have been digitally processed and in time information has been expanded, especially in the form of the specification of the precise sites of the events, the visibility at the time of the accident, weather conditions, damage incurred and the like. Unfortunately, to date no information about the specific animal involved in the collision is recorded anywhere. Such information would be significant especially in terms of accident prevention and the implementation of specific measures.

The decisive factor is timely and quality media coverage of the current situation in the Czech Republic. This shall be one of the major preventive measures to help reduce these collisions, significantly increase the safety of people using means of transport and save dozens of animals every day.

The objective of the study was to collect and evaluate data about animal collisions with motor vehicles in the entire Czech Republic for the period of 2007-2016. To process this data in the minutest detail possible and try to ascertain the causes of these events. Furthermore, to evaluate the collision trend and obtain data about damage occurring to personal property and health in order to specify the consequences of the collisions and how dangerous they can be. To make an effort to design the most effective and simple measures to prevent or at least significantly reduce these collisions.

Traffic infrastructure in the Czech Republic and its impact on the animal population

The developing infrastructure of the Czech Republic in many cases is an almost insurmountable obstacle for migrating animals. This mainly concerns roads but also the railway network. The transport infrastructure is one of the significant factors of regional development because it connects people and business entities in space within the scope of business and recreational journeys.

It is thus necessary to continuously develop the road network. One of the possibilities is either to modernize the current roads or build new roads to reduce the load on the current network (Košňovský, 2014). Frequented roads constitute a barrier for many animals and prevent them from free movement through landscape; further impacts include direct annexation of biotopes during the construction of roads (Zikeš, 2002). The animals subsequently seek ways in which to overcome these barriers, or search for “weak points” in the barriers, which then creates a higher risk for road users.

Roads as a barrier

We can define a barrier in the landscape, for example, as a certain obstacle, hindrance or barrier preventing animals from moving from one place to another. On the other hand, the barriers may play a role in protecting animals from entering roads. It is thus significant to determine the degree to which the barrier acts as a barrier for the animals – potential risk and the extent to which it acts as protection from such risk.




Another concept of roads as barriers according Ascenao et al. (2017) may be that the barrier is a raised edge or restriction that has a negative effect on the loss of natural sites and

may create a barrier effect because of interference and thus increase the mortality rate of animals. It may also concern so-called invisible barriers, i.e. noise barriers that restrict the animals to the same extent, but due to gradual domestication, animals get used to this type of barrier and subsequently stop perceiving it with their senses (Ilgurel, 2016). On the other hand, many research studies are considering whether the barriers that prevent animals from entering the roads are even safe also for travellers in cars (Nycz, 2016).

An artificial man-made barrier has a significant negative impact on the population of game to which the individual species cannot or do not adequately adapt. Highly frequented roads such as highways and motorways, whose density in the landscape continues to grow disproportionately, are insurmountable obstacles for many species of migrating animals (Anděl et al., 2005).

For many large mammals, the transport barrier is not insurmountable (Tab. 1), but the traffic density and vehicle speed make it dangerous for the animals and road users (Aanen, 1991).

Table 1 Factors that impact road migration according to Martolose et al.

Factors	Probability of animals entering the communication		
	Increases 	Without influence 	Decreases 
Landscape type	Heterogeneous landscape, the predominance of natural elements	Homogeneous landscape	Urbanized landscape
Accompanying vegetation of road	In field	In woods	Without vegetation
Traffic intensity	Low	Medium	High
Level of communication	At terrain level, on a slight slit or embankment	In a deep cut	On high embankment
Fence of road	Without fence	Partly fence	Fully fence
Migration objects	Without migration objects	-	With migration objects
Day time	Twilight, sunrise	Night	Day
Season	Spring, autumn	Summer	Weather

Source: Martolos et al., 2014

Animal mortality rate caused by collisions with means of transport

If an animal collides with a motor vehicle, in 99% of the cases it entails the death of the animal and in many cases also injury to the persons involved as well as significant material damage.

From 2007 to 2016, 14 people died, 82 suffered serious injuries and 841 suffered minor injuries as a result of collisions with animals on our roads. The total number of accidents was

63,599. It is quite certain that the animals are not to blame for all these collisions; if the drivers respected the road traffic rules and anticipated such a collision in these dangerous sections, this would reduce the accident rate. But there is an acute lack of adequate information about the dangerous sections and risk of collision with animals in the Czech Republic, which substantially differs from many other European countries (Germany, Netherlands).

Lima (2015) discusses the response of the animal to collision with a vehicle. According to him, in many cases, the animal is capable of avoiding the collision by natural instinct. Naturally, this also depends on the response of the driver and electronic detection of the vehicles. According to him, modern systems in motor vehicles give mammals a greater chance of survival when crossing roads.

In the Czech Republic, the animals that are most frequently hit are wild boar (*Sus scrofa*), European hare (*Lepus europaeus*), red fox (*Vulpes vulpes*) and European roe deer (*Capreolus capreolus*) (Anděl et al., 2011). It is clear from his research that suitable fencing in combination with an eco-duct has the consequence of reducing the risk of accidents.

Animal migration and roads are very complicated systems that should mutually respect each other in every crossing design, and the local conditions must be evaluated during each case of construction planning for maximum coherence between the landscape and the roads (Anděl et al., 2006).

The behaviour of migrating animals in relation to the highway was also described by Zikěš (2002) in his work, in which he states that if the migrating animal encounters a highway, it may solve the arising problem in various ways, for example:

- By changing direction of movement and abandon – if the animal does not have a clear migration destination.
- The individual may move along the highway until it finds a suitable migration object for crossing the obstacle.
- It runs across the highway surface, which may result in a collision with a motor vehicle.

Planting vegetation along roads is an important form of protection for animals and a method for preventing collisions. Desai et al. (2012) states that it is necessary to plant vegetation, not only along the roads, but also at sites with industrial zones.

Currently, this situation is often solved by fencing the roads and highways, thus blocking animal migration. However, the biggest disadvantages are high costs and maintenance (Kostečka, 2015).

Actual field research revealed many deficiencies, which do not make the fences around the roads “protection for the animals”, but rather their killers. It is not possible to build a fence in such a manner that it terminates a few metres before the start of the next measure in the form of, for example, a crash barrier. Such a gap is a fatal point for the animals, which enter the road where the other side is completely fenced off and the animal thus has no chance to find its way back, naturally resulting in 99% of cases with a collision with passing vehicles. The fences around the roads are described by Ascenao et al. (2013), who states that it is the most effective method for preventing such collisions, but he emphasises that their construction must be designed perfectly to prevent unnecessary deaths due to poor realisation and subsequent maintenance.

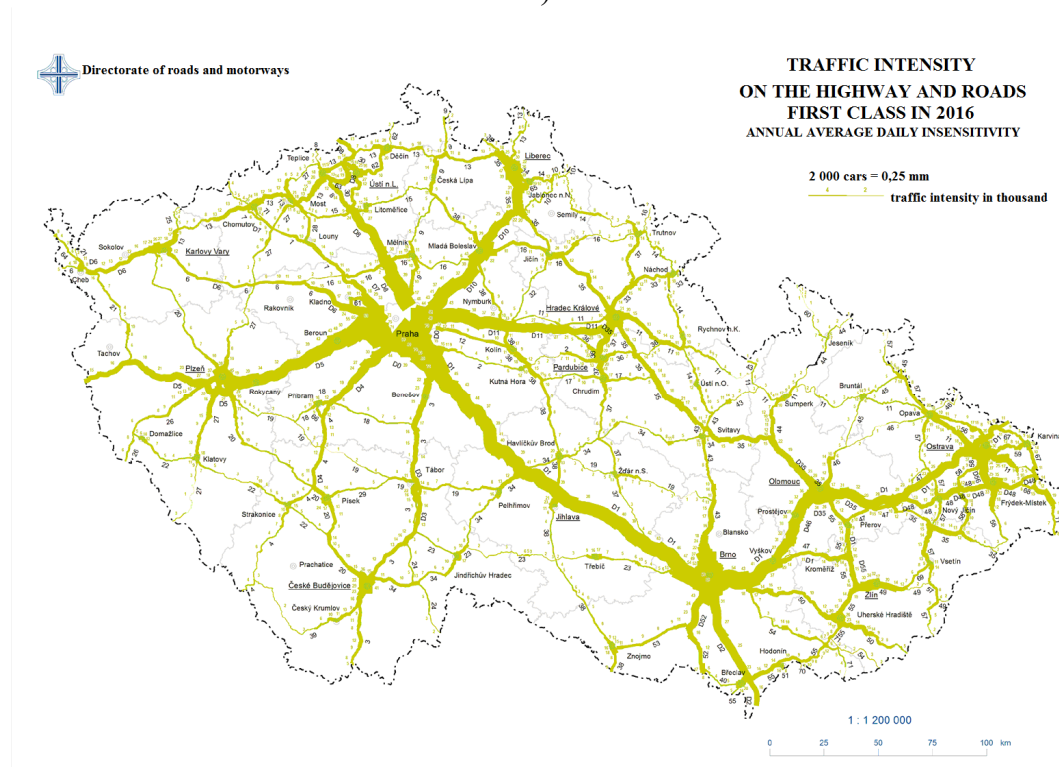
Traffic density and its impact on collisions and animal mortality rate

The traffic density or intensity is a major indicator of road load. According to the Internet resource www.ceskedalnice.cz, it is most commonly presented as the, so-called, annual average daily intensities. However, the destination and journey distance are not evaluated in relation to the accident rate, i.e., the ratio of recreational trips to the total load and accident rate is not considered.

Concerning the visitation rate of the individual tourist destinations, people mostly travel by passenger car. Naturally, this is related to the problem of collisions between vehicles and animals on the roads. According to CzechTourism, the most visited places in the Czech Republic are Prague followed by the ZOO in Zlín, industrial monuments in Dolní Vítkovice and the latest top destination – Aqualand Moravia. Significant destinations are also the mountain regions (Šumava, Krkonoše), which are very popular with tourists in the Czech Republic (Klufová, 2016), and the spa regions (Bozóti, 2015). Further destinations for mainly the local population are significant recreational regions such as Sázava and the Upper Vltava catchment areas, Bohemian Paradise, Lipno, South Moravia and the like. The journeys by passenger car to these areas are associated with a high risk of collision with animals because the holiday-makers often depart on Friday in the late afternoon hours and return on Sunday in the evening, often in low visibility conditions and without adequate physical rest.

According to the Road and Motorway Directorate, motorways and first-class roads are the most frequented.

Figure 1 Traffic intensity on the motorways and first-class roads in 2016 (the thickness of the line indicates the relative load of the road).



Source: www.ceskedalnice.cz

The highest number of accidents occurred on first- and second-class roads, which is naturally influenced by the fact that these are the most common roads in the Czech Republic. The total distance of motorways and roads in the Czech Republic is almost 56,000 km, of which 1,250 km are motorways, 5,811 km are first-class roads, 14,587 km are second-class roads, and 34,130 km are third class roads (www.rsd.cz). Generally, the Czech Republic ranks 21stst in terms of the number of fatal traffic accidents in the EU (www.autoklub.cz). The Tab. 2 shows the number of collisions in relation to the distance of the individual types of roads.

Table 2 Number of collisions (2007-2016) converted to 1 km of total road distance

Types of roads	Number of collisions	Length of roads (km)	Number of collisions 1 km
Motorway	3380	1250	12,8
1. class	22676	5811	3,9
2. class	19967	14587	1,3
3. class	14473	34130	0,42

Source: Own processing.

METHODOLOGY

The Czech Republic has an area of 74,864 km², and more than 55,000 km of roads. The data used in the research was acquired from the Police of the Czech Republic and the author's own

field research. At present, the Police records the accidents – collisions of animals with motor vehicles in a high-quality manner; the location is ascertained with a precision of 1 m, the weather conditions at the time of the accidents, light conditions and many other attributes that can be applied very well in various statistics and research. Unfortunately, only collisions to which the police were called and in which people were injured or major damage to property occurred are recorded. There is no record of the type of animal involved in the collision. The author's own research revealed that most of the cases involve medium or large animal species, i.e., species from the size of a hare, fox, otter or badger. Upon collision, the smaller animal species cause almost no damage at all and for this reason, these events are not recorded anywhere.

The basis of this work was the acquisition and processing of data on collisions of motor vehicles with animals from 2007 to 2016 in the entire territory of the Czech Republic. The data were acquired from the author's own field research on the individual roads and the study of police statistics, which contain records of the events that resulted in death or personal injury and also those events that resulted in damage to property. The data were subsequently processed and separated into several groups for a more detailed analysis:

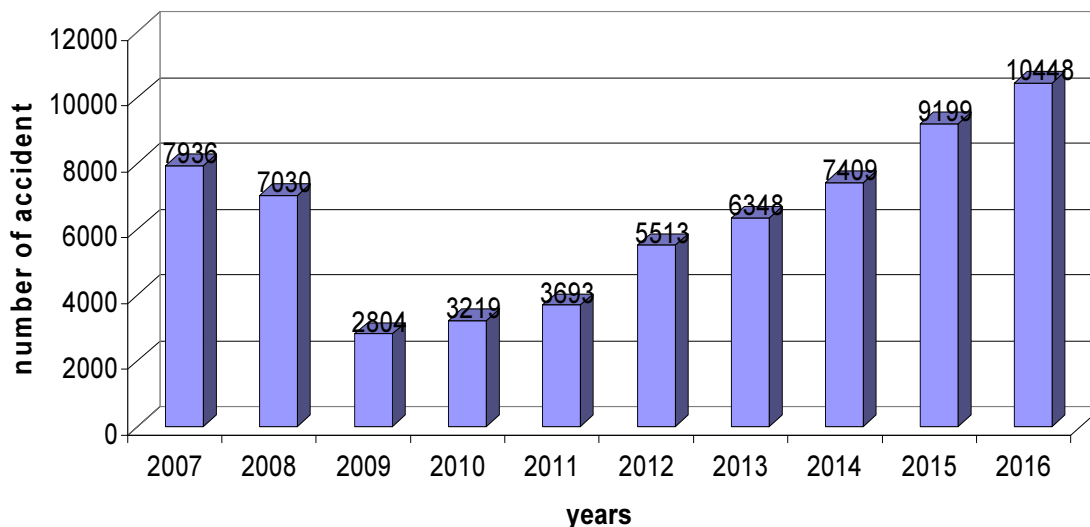
- map co-ordinates
- date of the event
- time of the event
- type of road on which the event occurred
- vehicle type
- death toll
- persons with severe injuries
- persons with minor injuries
- total material damage in hundreds of crowns
- weather conditions at the time of the accident
- visibility

The map data from the ARC GIS system were used for the clearer representation and processing of the data.

RESULTS AND DISCUSSIONS

After processing the source data into the form in which it is used, several comparisons and visualisations of individual years were made for the entire Czech Republic.

Figure 2 Number of collisions for the individual years in the period 2007 – 2016 for the entire Czech Republic.

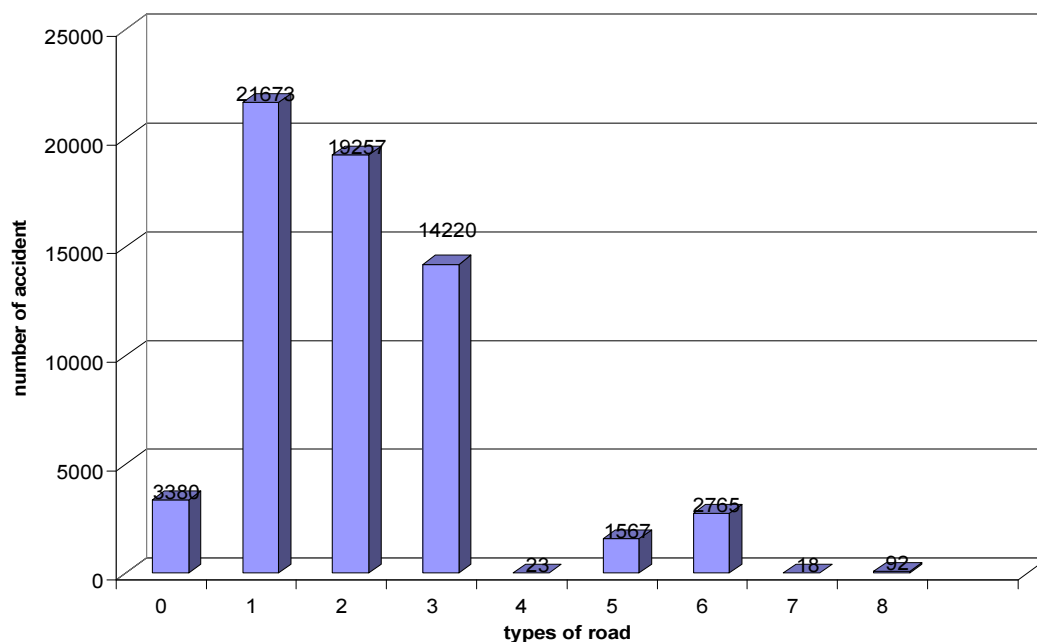


Source: Own processing.

The highest number of accidents was recorded in 2016, the lowest in 2009. After 2008, the rate of accidents involving collisions with animals had a declining trend, but rapidly increased again from 2010. According to the traffic police, this situation is due to the disproportionate increase in road traffic.

Figure 3 Number of collisions in the period 2007-2016 on all types of roads in the Czech Republic.

(0 - Motorway, 1 – First-class roads, 2 – Second-class roads, 3 – Third-class roads, 4 – Node (i.e. a monitored crossroads in selected towns), 5 – Road monitored in selected towns, 6 – Local road, 7 – Utility road, 8 - Other parts of roads)



Source: Own processing.

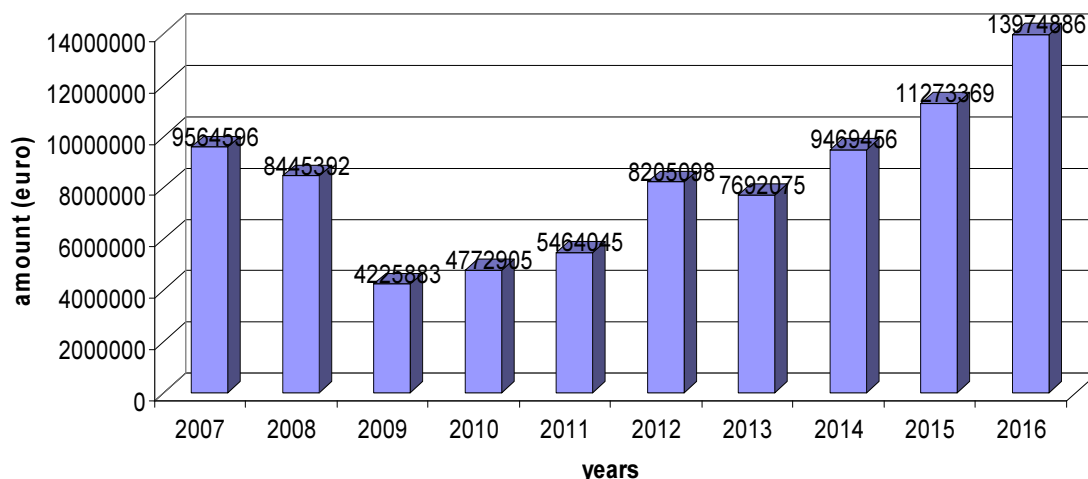
Kušta (2011) states that collisions between animals and motor vehicles are most often influenced by the time of the event and month in which the collision occurred. He states that accidents mostly occurred at about 10 p.m. and the second wave of collisions occurred at about 6 a.m. It is further stated that collisions occurred most frequently in April and May, and the next month in line was December. From the results for the entire Czech Republic, which we processed, it is possible to agree with this claim. On the contrary, from the results of the Prague East District (Šmíd 2013), these data differ, since in 2008, for instance, May had the highest rainfall followed by November, in 2009 the largest number of accidents occurred in May followed by October.

According to my data analysis, the highest number of accidents occurred at night, without public lighting, and the visibility was not influenced in any way by the weather conditions. A surprise is the ascertained fact that a very high number of accidents occurred during the daytime when the visibility was also not influenced in any way by the weather conditions (Šmíd et al., 2014).

Similar results for Central Europe are presented by Hothorn et al. (2012) and Pokorný (2006). The reasons may be not only the lower daily intensity of transport, but also worse driving conditions and less passable roads in winter when vehicles run at lower speeds (this applies mainly to first-, second- and third-class and other roads). Nevertheless, other authors contend that there is a mild increase in the occurrence of collisions with animals in the winter, for example, in Sweden (Wahlström and Liberg, 1995).

The highest number of collisions on first-class roads in the Czech Republic for the given period – 22,676. During the classification of the roads according to Act No. 13/1997 Coll., the Road Act, the largest part of the Czech road network is composed of first-class roads; the result shall certainly be impacted by this factor.

Figure 4 The scope of damage to property in the period 2007-2016 for the entire Czech Republic (in Euro).

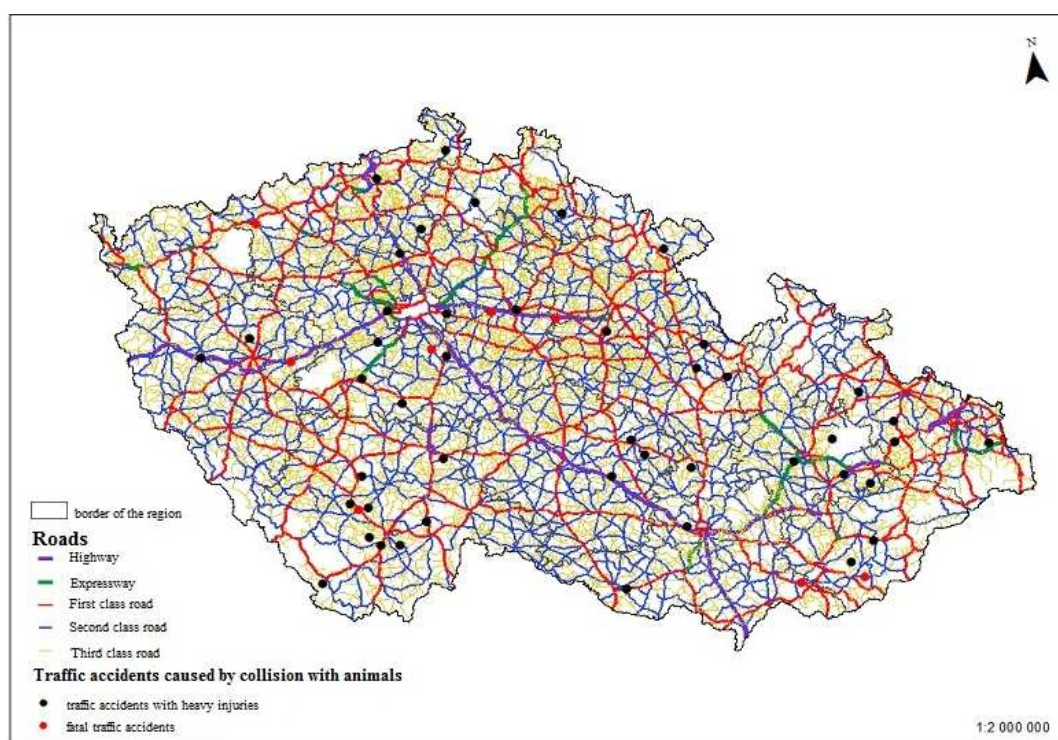


Source: Own processing.

The highest damage to property occurred in 2016 in the amount of €13,974,886, while the least was in 2009 in the amount of €4,225,879. The total damage in the period 2007-2016 in connection with collisions with animals on the roads for the entire Czech Republic is €83,087,709. On average, one traffic accident results in damage amounting to €1,306.

If we focus on the health and safety of people, which is the highest priority of the research, we ascertained that in the period in question a total of 923 people were injured, of whom 5 people unfortunately died of their injuries.

Figure 5 Collisions between animals and vehicles 2010-2016 resulting in death or severe injury of people.



Source: Own processing.

Fig. 5 shows the places where severe injury (black spots) or death of people (red spots) occurred in connection with the collision of a vehicle with an animal.

Table 3 Number of collisions (2007-2016) - comparison of the summer holidays (with a higher road usage associated with tourism) and selected months (before and after the holidays)

Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Summer holiday	1369	1111	438	885	558	885	1027	1277	1558	1691
March – April	1428	1036	447	436	611	813	969	1242	1371	1808
September - October	1436	1294	482	708	641	1221	1169	1385	1803	1954

Source: Own processing.

Tab. 3 shows the number of accidents that occurred during the summer holidays when the traffic on the roads should have been higher for reason of travel (holidays, transport of children going for holidays and the like). For comparison, the periods April-May and September-October were selected at random. We determined that the holidays do not have any significant impact on the number of accidents – collisions with animals. The holiday period is not even different in the overall number of traffic accidents (www.autoklub.cz). Overall, in the period 2007-2016 there were **10,799** collisions during the summer holidays; during the selected months of April and May **22,892** collisions occurred and in September and October there were **12,093** collisions. The reason for the lower number of incidents may thus on the contrary be lower traffic on the roads during the summer holidays than in other months during the year. People are taking holiday and are not travelling to work every day. On the contrary, in the period of April-May, animals are highly active (migration) and weather conditions are generally worse. These results are also confirmed by the accident statistics of the Autoklub ČR (www.autoklub.cz).

Table 4 Number of collisions (2007-2016) - comparison of the Christmas season and the same days in the selected month (May)

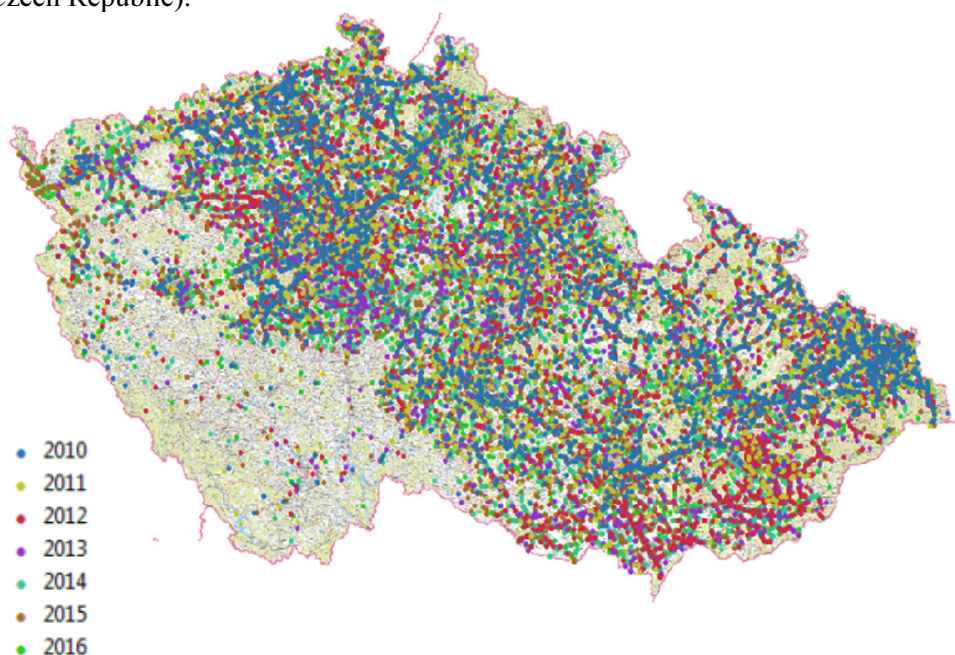
Years	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Christmas 24, 25, 26	53	45	22	18	22	38	42	55	70	44
May 24, 25, 26	76	65	21	31	31	57	75	50	87	94

Source: Own processing.

A further comparison was between the Christmas season, when road traffic should have been higher again, especially for reason of family visits and trips to winter resorts. Tab. 4 shows that the number of collisions does not differ significantly and, on the contrary, the number of collisions on the same day of a month selected at random (May) is higher. Overall, the Christmas season in the years in question registered 409 collisions, and 587 collisions occurred on the same days in another month.

From the stated results, we can thus state that the free days or summer holidays do not have any significant impact on the higher number of accidents in connection with collisions between animals and motor vehicles. The problem is year-round and it is not possible to focus only on individual months because the result shall not differ in any way.

Figure 6 Graphic representation of collisions for the period of 2007-2016 (available data from the Czech Republic).



Source: Own processing.

The coloured spots in the Fig. 6 show the accidents in the individual years in the entire territory of the Czech Republic. By plotting the precise GPS co-ordinates, it was possible to get an overview of the density of these collisions. Unfortunately, this data is missing in part of South Bohemia, the reason being the recording of data on so-called “Euro forms”, where the accidents are recorded by hand on a form and are not digitalized. These data are currently unavailable, and their subsequent processing will be very difficult. However, for quality research and a clear view of the situation in the Czech Republic, these data are indispensable because field research allows us to get only an idea of these events but not the precise situation.

CONCLUSION

In this paper, we confirmed the fact that collisions with animals on the roads in the Czech Republic have a continuously rising trend. At the beginning of research, (Šmíd, 2012), we ascertained that the great majority of roads are not in any way protected against collision with animals and drivers are not even warned of this danger. Road signs to reduce speed or any signs warning about the possible presence of an animal were virtually absent. On the contrary, there was a decline in the number of warning traffic signs although the concerned road sections are still registering accidents.

A great trend at present is fencing of the motorways, but unfortunately the fences are not completed everywhere. The result of this measure shall be verified only in subsequent years. There is fear that the result of this measure shall not be significantly positive because the fences are not safely completed at many points and animals can without any difficulty enter the road at these points. These places are extremely risky because drivers do not assume danger in the form of animals on the road. If such a situation arises, the animal is incapable of finding its way back through the fence and away from dozens of passing motor vehicles.

A similar trend is so-called “scent fences” on the lowerclass roads, which, however, require continuous maintenance. Wild game (especially roe deer and wild boar) quickly get accustomed to this obstacle and stops perceiving it. For this reason, it is almost impossible to permanently complete this research; instead, it must be but continued into the future along with monitoring the development of the situation in connection with the implemented measures. For road users, these blue illuminated fences mean safety against collision and reduced attention.

The basis of prevention must be quality awareness of the population. The warnings for drivers that collision with an animal may occur should be posted at points most frequented by the drivers. Various leaflets carrying this information at petrol stations, at least in three world languages, would be a good start for this prevention. It is further necessary to inform the public in the media, such as, on the radio, television and internet. We have never heard any warning of such a problem on traffic radio broadcasts for drivers. A great benefit could also be so-called unsolicited text messages in which the operator sends SMS messages containing various types of information at random according to the current location of the mobile telephone users. In the course of our research we did not register any warnings on digital information signs installed on the most frequented Czech roads and motorways in recent years, not even during normal travel (average personal travel distance of approx. 100,000 km). A further potential solution, one that needn't be so expensive, is road signs warning drivers about the potential danger of collisions with animals. These signs cost only tens of euro, but may be a very useful source of information.

In conclusion, it is also necessary to state that we cannot only blame the animals as such for these collisions, as people are much more to blame – excessive speed that is unsuitable for the road conditions, inattentive driving, the poor technical condition of the vehicle and the like. If a system were established in the Czech Republic that is identical to those that exist, for example, in Norway, where the insurance company reduces indemnity in a relatively drastic

way upon determining a violation of the road traffic conditions stipulated by law (for example, excessive speed), the number of accidents could be significantly lowered.

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A TELEPÜLÉSI KÖTŐDÉS ÉS A Z GENERÁCIÓ - EGY MAGYARORSZÁGI KÖZÉPVÁROS PÉLDÁJA

THE SETTLEMENT ENGAGEMENT AND THE Z GENERATION – THE EXAMPLE OF A HUNGARIAN CITY

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Abstract

My research focuses on the settlement aspects of nonbusiness marketing. It highlights a problem, which today many domestic and rural communities are struggling with: the out-migration of young people. This long-lasting problem in the rural environment has continued in the 2010s and affects not only villages, small towns but mid-sized cities, as well. Many research results indicate that retention of a young workforce is a generic problem in Hungary today, almost in every settlement.

In this paper I highlight the different approaches of identity and also the values that are important to the high school students, as the members of generation Z. I also analysed their bondage to the settlement where they live. I take the case of a Hungarian mid-sized city. The purpose of this study is to explore the strength of the urban attachment of the young people and the way how they see the city. Doing this, my goal is to show the direction of further development of the settlement, and thus, in the broader sense, the future development of Hungarian towns and mid-sized cities as well.

Keywords: Z generation, identity, nonbusiness marketing, settlement marketing

Absztrakt

Kutatásom a nonbusiness marketing települési aspektusait vizsgálja. Azon problémát állítja középpontba, amellyel napjainkban számos hazai, vidéki település küzd: a fiatalok elvándorlását. Ez a vidéki környezetet régóta sújtó probléma a 2010-es években tovább gyűrűzött, s immár nem csak a falvakat, kisvárosokat, de a vidéki nagyvárosokat is érinti. Számos kutatás eredménye jelzi, hogy a fiatal munkaerő megtartása generális problémát jelent ma Magyarországon, szinte minden település számára.

Jelen tanulmányban rávilágítok az identitás különböző megközelítéseire, továbbá arra, hogy a jelenleg középiskolás fiatalok, vagyis a Z generáció mit tartanak értéknek, kötődnek-e a településhez, ahol élnek. A vizsgálathoz egy magyarországi középváros esetét veszem alapul. A tanulmány célja, hogy feltárja a fiatalok városi kötődésének erősségét, továbbá azt, hogy milyenek látják a várost jelenleg. Mindezzel célokom, hogy irányt mutassak a település további fejlődéséhez, ezáltal pedig tágabb értelemben a magyar kis- és középvárosoknak egyaránt.

Kulcsszavak: Z generáció, identitás, nonbusiness marketing, településmarketing

BEVEZETÉS

Identitás, települési identitás

Az idegen szavak szótára szerint identitás latin eredetű szó, jelentése: azonosság, önazonosság, azonosságtudat (Idegen szavak gyűjteménye/identitás). Köcsné a következőképpen fogalmazza meg az identitás fogalmának tartalmát: *„Identitás, azonosságtudat; annak tudatosítása, hogy »ki és mi vagyok«, sőt először is, hogy »én-én vagyok«. Az identitásnak fontos alkotóeleme a csoport-hovatartozás, a szűkebb értelemben vett társas identitás. A társas identitás egy csoporttal való azonosulás, tehát az »én« »mi«-vé alakítása.”* (Köcsné, 2004) A szerző kiemeli, hogy az identitásnak csak egyik eleme az önazonosság, de a szociális vagy társas identitás legalább olyan fontos. A szociális identitás azokban az emberi közösségekben jelenik meg, ahol megfordulunk, ide tartozik a lakókörnyezet, település is.

A helyi identitás, helyhez való ragaszkodás fogalmát a szakirodalomban több megközelítésből vizsgálták.

Braun szerint a települési identitás egy adott helyet (város, kerület stb.) azonosít annak tereivel, közösségével, lakóival, kultúrájával, hagyományaival és egyéb értékeivel. Ennek forrása a mindenkori polgári büszkeség, mely a lakosok számára a valahová tartozás érzetét kelti (Braun, 2008).

A Scannell és Gifford által megfogalmazottak szerint az identitás azt is figyelembe veszi, mit gondolunk önmagunkról, énünkről, magában foglalja a valahová tartozás érzését és a földrajzi helyekhez való kötődést is (Scannell – Gifford, 2010). A Scannell – Gifford szerzőpáros három tényezőt nevezett meg, ami a helyhez való kötődés szempontjából kiemelten fontos:

- a személy, aki valamilyen mértékben kötődik a helyhez, vagy egyéni (pl. személyes emlékek miatt), vagy közösségi szempontból (az ott élő emberek, személyes kapcsolatok miatt),
- az a pszichológiai folyamat, aminek nyomán az érzelmi kötődés kialakul,
- a hely, amihez az ember kötődik (Scannell – Gifford, 2010).

Stadman a települési identitást egy másik oldalról közelítette meg. Szerinte az egyének nem a környezetük fizikai voltához ragaszkodnak, hanem az azok által megélt élményekhez (Stadman, 2002). Mindennek pedig akkor van a legnagyobb hatása, ha gyerekkori élményekről beszélünk, hiszen ilyen esetben személyes vonatkozású a kötődés (Knez, 2005).

„Az egyén sohasem a külső világ valós fizikai megjelenése alapján tájékozódik, él, mozog a térben, hanem mindig a benne élő szubjektív kép alapján cselekszik.” (Szakál, 1995:27) Egy település, de bármely élethelyzet megítélése jelentős mértékben függ attól, hogy az egyén

mikor, milyen pillanatban látja, vagy épp éli át az adott impulzust. Erre utal a fenti idézet, s ez teszi igazán összetetté az identitás és a települési, térségi kötődés megítélését. Az identitás személyiségjegyekben való kifejezéséhez hozzásegíthet a Gyulavári-Malota által kifejlesztett kultúraszemélyiség skála, mely nem csak országokra, hanem városokra is alkalmazható, és az adott város személyiségjegyeinek percepcióját méri, melyre alapozva az identitás kialakítása is könnyebbé válhat (Malota - Gyulavári 2014, Gyulavári - Malota 2014).

Az identitás tehát olyan valamiként határozható meg, amit az adott településről célszerű lenne kommunikálni, s amit szeretnénk, hogy a fogyasztók gondoljanak a városról. Ebből kifolyólag a városfejlesztés folyamatába be kell építeni az identitás tervezését is, mely a település eredeti, másolhatatlan és egyedi értékeire épít (Kavaratzis, 2004). Ezen identitás kialakításához a városi vezetőknek meg kell határozniuk az érintettek körét, s fel kell ismerniük azok igényeit (Paliaga et al., 2010). A City Identity megközelítési technika alkalmazása segítségünkre lehet ebben. A City Identity eredeti megfogalmazásban Corporate Identity néven jelent meg a köztudatban, mint a vállalkozások marketing tevékenységét szolgáló elem. *„A Corporate Identity különböző területekből összetevődő, sajátos, adott cégre jellemző megjelenést eredményez, aminek a visszatükröződése a Corporate Image, vagyis az a kép, amely az ügyfelekben, a tágabb környezetben él a cégről.”* (Töröcsik, 1995:18)

A City Identity módszertan alkalmazásának a térségekre, városokra nézve feltételei vannak. A településnek elsősorban olyan kisugárzást kell adnia, amivel a településmarketing célcsoportjai azonosulni tudnak. Fontos, hogy a városvezetés hosszú távú bizalmat ébresszen a célcsoportokban, kommunikációja hiteles legyen. Mindezt csak akkor lehet elérni, ha a település ismert, pozitív imázssal, s egyedi jellemzőkkel rendelkezik, melyeket megfelelő marketing eszközökkel hangsúlyozni is képes (Töröcsik, 1995). Az identitás egyes szerzők szerint a települések sikerének eléréséhez is kiemelkedően fontos; hiszen „a kötődés, identitás erősítése lehet az egyik eszköze a fiatalok helyben tartásának vagy későbbi hazahívásának”, (Berkesné et al., 2017., p. 15) sőt: a települések sikerének egyik fokmérője is lehet (Ernszt, 2017. p. 37.).

A City Identity tulajdonképpen az egyes szervezetek, helyek, területek, városok megkülönböztető jegyeit foglalja magába, vagyis hozzájárul a város relatív versenyelőnyének kifejezéséhez (László, 1998; Töröcsik, 1995). City Identity lényege tehát az, hogy „személyiséget” adunk a településnek, aminek következtében az így kialakult identitás vonzerőt gyakorol a célcsoportokra, akik ezt az identitást a településsel azonosítják.

Egy város CI alapelemei a következők:

- A City Design (városi arculat), mely a település szimbólumainak, formai és arculati elemeinek egymásra épülő rendszerét jelenti, ezáltal egy egységes, összehangolt,

vonzó vizuális megjelenést eredményez. Magába foglalja a település környezeti, földrajzi, építészeti elemeit, az önábrázolást és a vizuális megjelenést is.

- A City Behavior (városi kultúra) a lakosok magatartásából, a hagyományokból, a szokásokból, a helybeliek életfilozófiájából és életszemléletéből építkezik, s ennek hatását vizsgálja a településen kívüli közvélemény irányába.
- A City Communication (városi kommunikáció) a település által használt közvetlen kommunikációs eszközök alkalmazását jelenti, melyek így az informáláson túl befolyásoló hatással is bírnak a közvéleményre. Nem szabad megfeledkeznünk az ún. nem eredendő kommunikációs eszközökről sem, hiszen a „minden kommunikál elve” a településmarketingben hatványozódva jelentkezik. Ide tartoznak tehát a közéleti megnyilvánulások, a települési események, rendezvények is (Piskóti et al., 2002).

Ezen alapelemek egysége képes csak arra, hogy a települési identitás kialakulásához, fejlesztéséhez hozzájáruljon, hiszen csak az elemek együttes működése képes kiváltani a megfelelő összhatást. Ahhoz azonban, hogy ezt az egységet, s általa a céljainkat megvalósítsuk, további kritériumoknak kell megfelelni:

- a célmeghatározás során jelenjen meg az individuális és szociális érzékenység,
- az identitáshordozók egyértelműen határozzák meg a települést,
- az alapelemek közti kölcsönhatás miatt szinergiahatás léphet fel, vagyis az elemek együttesen hatékonyabban működnek, mint külön-külön,
- a nyilvánosságának kiemelkedő szerepe van az identitás-kialakításban,
- mivel az identitás-kialakítás egy dinamikus folyamat, a célrendszert ennek megfelelően rugalmasan kell kezelni,
- az identitás kialakítása során kétirányú kommunikációt kell kialakítani, hogy a változó igényeknek és elképzeléseknek megfelelően fejleszthessük azt (Törőcsik, 1995).

A City Identity önmagában nem képes kialakítani a városi identitást. Annak alapját mindenképp a település célcsoportjainak összetétele és elvárásai adják, s az általuk képviselt „mi tudat”, mely az alapvető egyéni motiváción, teljesítményen és a településen belüli koordináción alapul. A hármas pillér meghatározó eleme az önkormányzati küldetés és filozófia is, melynek támasza az a településben rejlő egyediség, melyet a városvezetők hihetően és bizalmat ébresztve képesek közvetíteni a célcsoportok felé.

Egy település identitásának, a „mi tudatnak” a kialakításáról eltérő véleményeket olvashatunk a szakirodalomban. Kotler szerint például a település arculata és identitása alakítható, fejleszthető. Murray szerint azonban az identitást nem lehet kialakítani, csupán felfedezni (Braun – Otgaar, 2008). Tanulmányomban elfogadom azt a tényt, hogy identitást csak meglévő véleményekre, benyomásokra lehet építeni, ugyanakkor hiszek abban is, hogy ezek az impressziók alakíthatók. A települési identitás legfontosabb kiindulási pontjának tehát az

ott élők „mi tudatát” tekintem, melyet a lakók és az önkormányzat közti kapcsolat fejlesztésével lehet a felszínre hozni, s abból tényleges identitást fejleszteni.

Az imázs és az identitás kapcsolatáról kevés feltáró tanulmányt olvashatunk a szakirodalomban. A fennálló kapcsolat igazolásaként Braunt idézem, aki szerint a városi imázs megerősítése a városi identitás fejlesztésével a leghatékonyabb (Braun, 2008). Szintén Braun fogalmazott úgy, hogy az imázs és az identitás fejlesztésén való munkálkodás tulajdonképpen megegyezik az érme két oldalával, hiszen e két elem a városmarketing fontos, s egymástól elválaszthatatlan része.

Amennyiben magát a területterméket vizsgáljuk, szintén elengedhetetlen az imázs vizsgálata, mert az így feltárt nézetek, eszmék, vagyis maga az identitás hozzájárulhat a tudatos, hosszú távú területfejlesztési stratégiákhoz (Kis, 2006). A CI koncepció is segíthet abban, hogy erősödjön a lakosok településhez való kötődése, identitása, s a település érdekében fellépő aktív cselekvési szándék (Piskóti et al., 2002).

Egy település érintettjei és a települési PR

Egy szervezet célcsoportjait vizsgálva láthatjuk, hogy van egy olyan réteg, amely minden szervezetben, minden társaságban megtalálható, ez pedig az a bizonyos belső közösség, melynek véleménye, benyomásai nagymértékben befolyásolják az adott szervezetről kialakult képet. Ezért kiemelten fontos az e célcsoporttal való kommunikálás, mely a marketingen belül önálló ággá fejlődött; ez lett a belső PR. A belső PR jelentősége azért nőtt meg az utóbbi években, mert a média által közreadott hírek, információk mindig jóval nagyobb elfogadással bírnak, hitelesnek, objektívnek tűnnek szemben a szervezet által közvetlenül kommunikált információkkal (Nyárády – Szeles, 2004).

A belső PR jelentősége megfigyelhető a települések esetében is, hiszen azt *„akár tud róla, akár nem, a település gyakorlatilag minden lakója végzi viselkedésétől, meggyőződésétől függően ki pozitív, ki negatív irányba mozdítja el a potenciális fogyasztót a vásárlási döntés folyamatában”* (Kraftné – Fojtik, 1998:57). A települések esetében tehát ez a belső marketing egy mondhatni „láthatatlan” tevékenység, hiszen minden lakó rendelkezik véleménnyel, impulzussal saját lakhelye irányába, s ezen érzéseinek bárhol, bármikor hangot is adhat. Ugyanakkor itt nem csak arról van szó, hogy egy lakó a külső potenciális vevők felé közvetíti ezt az üzenetet, de a személyes kapcsolatok révén befelé is nagy hatású, vagyis az általa lefestett kép, a benne élő identitás pedig nagyban meghatározza az ismerőseiben kirajzolódó arculatot és benyomásokat is (Kraftné - Fojtik, 1998). Ha a városlakók efféle nyilvánossági fórumokon, csatornákon vallanak véleményükről, annak meghatározó jelentősége, s abszolút hitele van (Nyárády – Szeles, 2004). Ezt a fajta információmegosztást még szemléletesebben a digitalizáció révén létrejött közösségimédia-felületek széles körben teszik lehetővé, ahol az

online fórumok, közösségi hálózatok (pl. Facebook, Twitter), vagy éppen tartalommegosztó felületek (pl. YouTube) terjeszthetik – akár célzottan – az egyes városlakók véleményét (Csordás et al., 2014).

A település lakossága felé irányuló PR tevékenység fő mozgatója tehát az „ahol érdemes élni” gondolkör megerősítése. Az ehhez kapcsolódó közvetlen alcélok lehetnek:

- a településhez való kötődés erősítése, a „mi tudat” kialakítása,
- a belső imázs javítása (helyiek által képviselt imázs),
- a lakosság aktivitásának növelése (aktív részvétel a városi folyamatokban),
- a belső turizmus fellendítése (Piskóti et al., 2002).

Ezen alcélokra az egymásra hatás és a dinamikus kapcsolat jellemző.

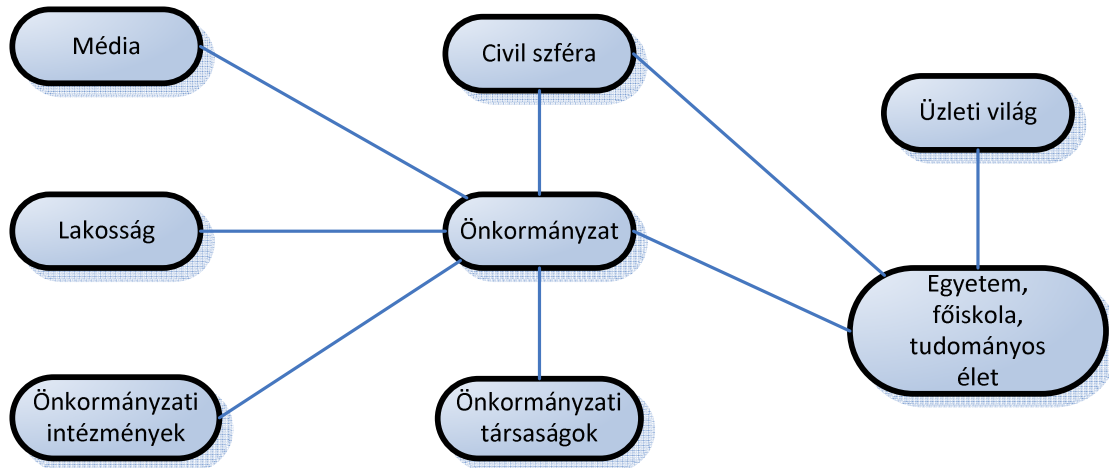
A legfontosabb PR feladatok értelmezése a település esetében a következőképpen alakulhat:

- a településhez tartozás érzésének kialakítása, belső közvélemény formálása,
- lakosok nyitottságának, vendégszeretetének fejlesztése,
- a városvezetés döntéseinek kommunikációs támogatása a helyi média által,
- a lakosok véleményének, igényeinek megismerése által a városvezetés döntéselőkészítésének támogatása,
- a település és környezete közötti kapcsolatok koordinálása, fejlesztése és elemzése (verseny társak, kooperációk),
- a lakosok tájékoztatása a települési célokról, eredményekről, feladatokról és problémákról,
- a település környezeti imázsának fejlesztése a lakosok bevonásával,
- a település arculatának tudatos fejlesztése és ápolása,
- a településen belüli kommunikációs magatartás irányítása, alapozása és hitelessé tétele.

A belső PR feladatokban érintettek körét az 1. ábra mutatja. Az ábra bal oldalán láthatók a legfontosabb véleményformálók, a média, a lakosság és azon önkormányzati intézmények, amelyek közvetlen, napi kapcsolatban állnak a lakókkal. A középpontban helyezkedik el maga az önkormányzat, aki képes e PR feladatok koordinálására és delegálására. Hozzá szorosan kapcsolódnak a civil szervezetek és az önkormányzati társaságok is, amelyek elsősorban a célok kitűzésében lehetnek az önkormányzat segítségére. A civil szféra és az egyetemek közti kapcsolat nem határozható meg egyértelműen, hiszen a tudományos élet képviselői általában magánszemélyként, s nem a szervezet képviseletében működnek együtt a civil szervezetekkel, bár ma, az egyetemek negyedik generációjának világában már ez sem jelenthető ki egyértelműen. Mészáros ábrája szerint az üzleti világ irányába csak a felsőoktatási intézmények hiteles kommunikációja és teljesítménye révén juthatunk el, így

rendkívül fontos e célcsoport bevonása is a kommunikációs tevékenység felépítésébe. E tekintetben nem értek egyet a szerzővel, hiszen a települési önkormányzatok közvetlen kapcsolatban kell, hogy álljanak az üzleti világgal. Ez megmutatkozhat a működtetés, üzemeltetés, hatósági engedélyezés, stb. területén ugyanúgy, mint az új, betelepülni szándékozó vállalkozásokkal való kapcsolattartásban is.

1. ábra A települési szintű belső PR



Forrás: Mészáros, 1998:8 alapján saját szerkesztés

A public relations az önkormányzatok marketing tevékenységén belül is két részre osztható: külső és belső PR-ra. Ez utóbbi egyes megfogalmazások szerint „a hivatalon belül, az önkormányzati vezetők és a hivatali dolgozók közötti megfelelő viszony kialakulását, a hatékony információ-áramlást jelenti (Kozma, 2006). A külső PR pedig a hivatalon kívüli kapcsolatokat állítja a középpontba, így érdekes módon, ha a település lakóival való kapcsolattartás viszonylatában vizsgáljuk a public relations-t, akkor itt hivatali külső PR-ról beszélünk.

A korábban bemutatott célcsoportok ismeretében a fenti elmélettel nem értek egyet, hiszen meg kell különböztetnünk a már a városban lakó, betelepült személyeket és vállalkozásokat a potenciális érdeklődőktől. A belső és külső PR fogalmát ennek értelmében a következőképp módosítanám az önkormányzatok esetében:

- önkormányzati belső PR: az önkormányzat és a település lakói, szervezetei, vállalkozásai közti megfelelő viszony kialakulása, hatékony információ-áramlás.
- önkormányzati külső PR: az önkormányzat kommunikációja, kapcsolatai a potenciális lakók, befektetők és betelepülni szándékozó vállalkozásokkal.

Tehát a belső PR tekintetében az önkormányzatok legfontosabb feladatának tekinthető a megfelelő tömegkommunikációs kapcsolatok kiépítése és ápolása, hiszen egy település életében az egyik legfontosabb véleményformáló csoport a média (Kozma, 2006). E jó

kapcsolat révén arra kell tehát törekedni, hogy a településről minél több pozitív hangvételű megjelenés valósuljon meg, hiszen ahogy azt már korábban is említettem, e hírek hitelessége jóval nagyobb, mint a közvetlen kommunikációé.

A médián kívül ki kell emelnünk a lakossággal való jó viszony ápolását is, hiszen ebben rejlik az identitás, s ez által az imázs is. Az önkormányzatnak azt kell sugalmaznia, hogy igyekszik minden eseményről, hírről informálni a lakosságot; hogy megbecsüli őket, s figyelembe veszi a véleményüket a döntés előkészítés során (Kozma, 2006). Németh et al. (2013) szerint a folyamatok elindításában az oktatási-kutatási intézményeknek, önkormányzatoknak, kistérségi-régiós szervezeteknek nemcsak részt kell vállalniuk, hanem húzó szerepet kell betölteniük.

A Z generáció jellemzői

A generáció olyan emberek összessége, *„akik ugyanabban a korszakban születtek, ugyanazon időszak formálta őket, és ugyanazon társadalmi markerek voltak hatással rájuk – más szóval a generáció egy azonos életkor és életszakasz, létfeltételek és technológia, események és tapasztalatok által összekapcsolt csoport”* (McCrinkle – Wolfinger, 2010:14). Értelemszerűen egy adott történelmi időszakban, gazdasági-politikai-társadalmi körülmények között élőknek ugyanazon impulzusok érik, így kialakulnak a maguk sajátosságai és közös jellemzői.

A generáció-elmélet két amerikai szerző, William Strauss és Neil Howe nevéhez kötődik. Generations (1991) című könyvükben megállapították, hogy egy adott generáció tagjai nagyon hasonlóan viselkednek, meghatározott világlátással és értékrenddel rendelkeznek. Az egyes generációk kb. 20-25 évente váltják egymást, természetesen lágy átmentekkel, adott esetben átfedésekkel. A szerzők szerint minden generációnak megvan a maga embertípusa.

A generációk címkézése a baby-boomerek megjelenésétől kezdődött, akik a szakirodalmi források szerint a második világháború után született generációt képviselik. Az ő „közös jellemzőik, hogy minden eddigénél inkább átlépték a globális, kulturális és szociogazdasági határokat. Az ő gyermekeiket nevezzük X generációknak, akik 1965 és 1979 között születtek

(Steigervald, 2014). Az Y generáció tagjai az 1980 és 1995 közötti embereket takarja (Tari, 2015).

A Z generáció tagjai 1996 után születtek, jelentős részük már kisiskolás kortól telefon és számítógép felhasználó. Közel felük „mozaikcsaládban” nőtt fel. Arról még nem rendelkezünk információval, hogy az internet által biztosított végtelen információhalmaz milyen személyiségfejlődést indukál az ő esetükben. Kisgyermekként találkozhattak már megrázó dolgokkal, például véres vagy erotikus tartalmú képekkel, filmekkel, mely személyiségükre nagy hatással volt. (Sulyok, 2003)

A Z generáció jelenleg, 2018-ban azon életfázisban van, amely keresi saját identitását, ugyanakkor Tari szerint ők az első igazi globális nemzedék (Homo Globalis), vagyis saját önálló identitásuk mellett soha egy generációra nem gyakorolt ekkora hatást a globalizáció. Ugyanazon a kultúrán nőnek fel, ugyanazokat az ételeket, divatot, helyeket kedvelik. A globalitás mindenben megjelenik, mindennapi életük során olyan szavakat, kifejezéseket használnak, amelyeket más generáció nem, és meg sem ért (Tari, 2011; Darvas-Péter, 2012; Fehérvölgyi et al., 2012). A Z generáció tagjait gyakori internethasználat jellemzi. Szabadidejükben gyakran használják okostelefonjaikat, valamint a különböző hordozható számítógépeiket. Gyakran tagjai valamely virtuális közösségnek is, amely elsődleges színtere lett a kommunikációnak (Z generáció: itt vagyunk!).

A mai fiatalok az interneten felnövő, annak képi és nyelvi világát ismerő generáció tagjai. Ez azt jelenti, hogy rövid, képekkel ellátott, naprakész információkat alkalmaznak. A korcsoportra a „rövid figyelem” jellemző. A nekik szánt üzenetek nagy részét „a kevesebb több” elve alapján célszerű eljuttatni. Náluk az egyszerűsítés, a lényegre törekvés vezethet eredményre (Törőcsik et al., 2014). A bennünket körülvevő környezet negatív irányba történő változását a tizen- és huszonevesek szokásainak kialakításával lenne visszafordítani, ráadásul ők pozitív példaként szolgálhatnak a még náluk is fiatalabb generációknak (Magyar-Keller, 2016).

CÉLKITŰZÉSEK ÉS MÓDSZERTAN

Kutatásom a nonbusiness marketing települési aspektusait vizsgálja. Azon problémát állítja középpontba, amellyel napjainkban számos hazai, vidéki település küzd: a fiatalok elvándorlását. Ez a vidéki környezetet régóta sújtó probléma a 2010-es években tovább gyűrűzött, s immár nem csak a falvakat, kisvárosokat, de a vidéki nagyvárosokat is érinti. Számos kutatás eredménye jelzi, hogy a fiatal munkaerő megtartása generális problémát jelent ma Magyarországon, Budapestet leszámítva minden település számára.

Jelen tanulmány célja, hogy rávilágítson az identitás és a Z generáció kapcsolódási pontjaira, továbbá hogy mennyire kötődnek azon településhez, ahol élnek. A vizsgálathoz egy magyarországi középváros esetét veszem alapul. A tanulmány célja, hogy feltárja a helyi fiatalok városi kötődésének erősségét, továbbá azt, hogy milyennek látják a várost jelenleg. Mindezzel célokom, hogy irányt mutassak a település további fejlődéséhez, ezáltal pedig tágabb értelemben a magyar kis- és középvárosoknak egyaránt.

A fentiekben alapulva kiinduló hipotézisem a következő volt: *A kiválasztott település példája jól szimbolizálja a magyarországi Z generáció problémáját: az eddigi életük során nem alakult ki erős kötődés a lakóhelyük iránt, s mivel a települést nem látják olyan helynek, ahol a jövőjüket elképzelik, ezért a fiatalok elvándorlási hajlandósága kiemelten magas.*

A fenti kutatási kérdések megválaszolása és a feltételezés beigazolására egy 2017-ben lefolytatott átfogó kérdőíves felmérést vettem alapul. A kérdőív vizsgálat tárgyául választott város középiskoláinak bevonásával készült. A 2016/2017-es tanévben összesen 2.905 fő középiskolás tanulója volt a településnek, akik közül 840 fiatal töltötte ki a kérdőívet 2017. február és május között.

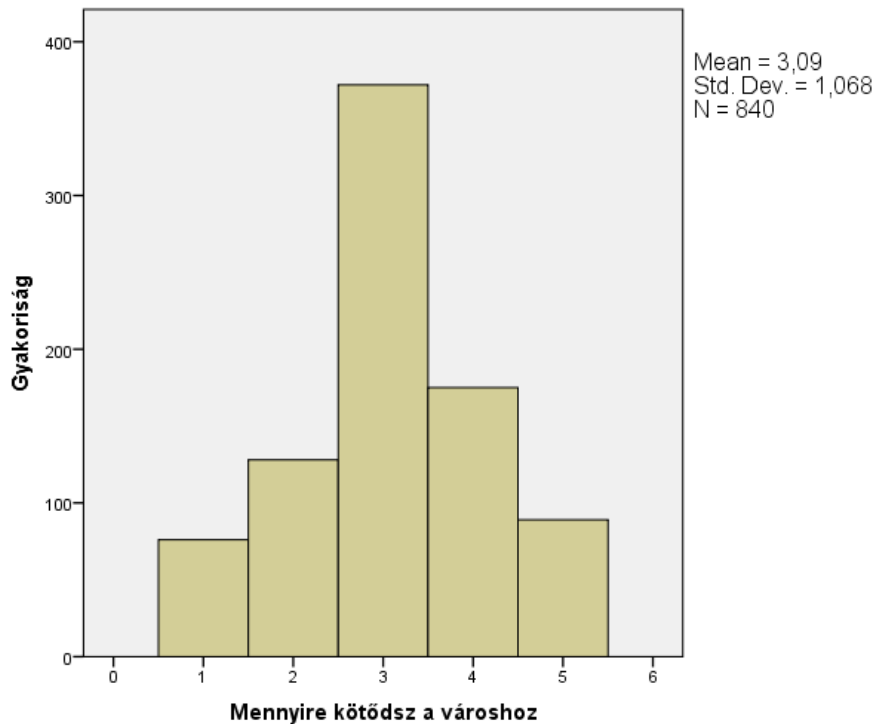
A kutatási feltételezésem igazolására egyszerű statisztikai, valamint ökonometriai elemzéseket alkalmaztam. A leíró statisztika a vizsgált jelenségek számszerűsített bemutatására, jellemzésére alkalmas. A kutatási minta jellemzőinek feltárását, valamint az adathalmazban történő előfordulási arányok bemutatását grafikus eszközök támogatják (Kerékgyártó et al., 2008). Az ökonometriai elemzések közül pedig a keresztábla elemzést és a varianciaanalízis vettem alapul. A keresztábla olyan statisztikai technika, amely két vagy több változót ír le egyidejűleg egy olyan táblával, ami megmutatja két vagy több korlátozott számú kategorizált vagy értéket felvevő változó együttes eloszlását (Sajtos-Mitev, 2007:138). A vizsgált változók közötti összefüggést a Khi-négyzet statisztika módszerével vizsgálhatjuk, melynek szignifikancia értéke alapján megállapítható, hogy van-e statisztikai összefüggés a vizsgált változók között. Amennyiben a Khi-négyzet szignifikanciája $< 0,05$, feltételezhetjük az összefüggést. A statisztikai szignifikancia bebizonyítását követően a kapcsolat erősségét is megvizsgálhatjuk, erre a Cramer-V mutató a legalkalmasabb, melynek értéke -1 és 1 között mozog, ahol a 0 és a hozzá közeli értékek a kapcsolat hiányát, míg az abszolút értékben számított 1 vagy aközeli érték a kapcsolat szorosságát mutatja (Sajtos-Mitev, 2007:143).

A varianciaanalízis (ANOVA) módszerének segítségével azt vizsgáljuk, hogy az egyes csoportok milyen mértékben különböznek egymástól adott változók átlagai alapján. Az elemzés során, a vizsgált csoportok által elért faktorértékek átlagait hasonlítjuk össze, annak érdekében, hogy megtaláljuk azon területeket, változókat, ahol a csoportok által elért átlagértékek szignifikánsan különböznek egymástól. A varianciaanalízis során az eltérést az F-próba alacsony szignifikanciája (Sig. $<0,1$) igazolja (Székelyi – Barna, 2005).

EREDMÉNYEK

A 840 megkérdezett középiskolás közül 45,7% volt nő, s 54,3% férfi. A válaszadók 27,9%-a a városi gimnázium diákja, 72,9%-a pedig valamely szakképző középiskolában tanul.

A diákok városhoz való kötődésének vizsgálata során azt tapasztaltuk, hogy közepes kötődésről számoltak be a fiatalok, a válaszok megoszlása normál eloszláshoz közelít (2. ábra).

2. ábra A városhoz való kötődés hisztogramja

Forrás: saját kutatás

Az ötfokozatú skálán átlagosan 3,09-es értéket és 1,07-es szórást mutatnak az adatok. Bár magának a skálának elemzése mindig felveti a kérdést, hogy az átlag eleget árul-e el a válaszadók valós véleményéről, jelen eredményekből arra következtethetünk, hogy bár a megkérdezettek csaknem fele valamilyen mértékű kötődést érez a város iránt, könnyen 'elcsábítható' egy jobb élet (magasabb fizetés, jobb életkörülmények stb.) reményében. Ez pedig, be kell látnunk, egyáltalán nem kedvező egy vidéki középváros számára. Hármás érték egy ötfokozatú skálán tulajdonképp azt jelzi, hogy különösebb érzelmek nem kötik a Z generáció tagjait a településhez.

1. táblázat A városhoz való kötődés leíró statisztikái

	N	Minimum	Maximum	Átlag	Szórás
Mennyire kötődsz a városhoz?	840	1	5	3,09	1,068

Forrás: saját kutatás

A szülővárosról rendelkező információk és a városvezetés munkásságának értékelése érdekében megkérdeztük a diákokat, tudják-e, ki a város polgármestere. A fiatalok 86,3%-a helyes választ adott a kérdésre, 13,7% viszont nem jó nevet tüntetett fel a kérdésnél, vagy üresen hagyta a cellát, ami azt jelenti, nem tudta megmondani a polgármester nevét. A kérdés felvetése már azért is érdekes tanulsággal szolgált számunkra, mert a városi vezetői a lakosság

4. ábra A szabad asszociáció indoklása

Lajhár	Kutya	Sas	Oroszlán
<ul style="list-style-type: none"> • lassú • unalmas • alszik • büdös • próbálna haladni de nem feltétlenül tud • érdektelen 	<ul style="list-style-type: none"> • <i>barátságos</i> • átlagos • mindig visszavár • sokat ugat • mindenki szereti • okos • <i>megbízható</i> • <i>hűséges</i> • büdös, koszos • <i>védelmeső</i> • kóborló 	<ul style="list-style-type: none"> • <i>határozott</i> • <i>védelmeső</i> • szabad • tud repülni • <i>megbízható közösség</i> • <i>tekintélyes</i> • erős és nemes • figyelmes 	<ul style="list-style-type: none"> • vad • erős • nagy, hangos • gyors • védelmeső • elszánt • <i>erős</i> • <i>bátor</i> • <i>szép</i> • veszélyes • <i>büszke</i> • harcos
Macska	Csiga	Egér	Turul
<ul style="list-style-type: none"> • <i>nyugodt</i> • távolságtartó • sokat alszik • csendes • szelíd • vad • adja a szépet, ha kell valami • unalmas 	<ul style="list-style-type: none"> • lassú • kicsi • erős • unalmas • nyálkás • gerinctelen • halk és kicsi • lassan fejlődik • <i>folyamatosan fejlődik</i> 	<ul style="list-style-type: none"> • kicsi • jelentéktelen • koszos, élősködő • unalmas • szegény • átlagos, beleolvad a környezetbe • csúnya • haszontalan 	<ul style="list-style-type: none"> • ritka, nagy, okos • történelme jelentős, de manapság nem sokan tudják, miféle állat is igazából • <i>erős</i> • <i>védelmeső</i> • régi • <i>csodálatos, szép</i> • szabad

Forrás: saját kutatás

A fenti eredmények alapján elmondható, hogy a középiskolás fiatalok a várost lassú, unalmas településnek látják. Érdekes ugyanakkor, hogy többen említették a város történelmi múltját, vagy épp nyugodtságát, megbízhatóságát, határozottságát, barátságosságát emelték ki. Láthatjuk, hogy a vélemény a városról legalább annyi diák szemében pozitív, mint amennyien a negatívumokat kiemelték. A kutatás – és a település hosszú távú céljai, fenntarthatósága - végett azonban meg kell jegyeznünk, hogy a szakirodalmi áttekintés szerint a Z generáció számára a gyorsaság, az interaktivitás, a szociális tevékenységek, a bátorság képvisel értéket.

Ezek közül mindössze a bátorság szó fordult elő néhány alkalommal a vizsgált magyar középváros esetében. Látható tehát, hogy a települést nem olyan helynek látják, amely az ő értékrendjük és ítéletük szerint vonzó, vagy ahol a jövőjüket elképzelik.

A település jövője szempontjából kulcskérdés, hogy a demográfiai szempontból amúgy is csökkenő tendenciát mutató fiatal korosztály mekkora hányada képzei el a jövőjét közép vagy hosszú távon az adott városban. A 840 megkérdezett fiatalnak 47%-a szeretne szülővárosában szakmai végzettséget szerezni, 34% pedig egyáltalán nem tervez ilyesmit. 18% még nem tudja.

Keresztábra elemzés segítségével (Pearson-féle Chi-négyzet szignifikancia értéke 0,000; a kapcsolat szorosságát mutató Cramer V értéke pedig 0,211) igazoltam, hogy alapvetően a férfi válaszadók mutatnak érdeklődést a településen megszerzhető szakmai végzettségek iránt, az összes férfi válaszadó 55,5%-a válaszolt így. A nők körében kevésbé népszerű ez az opció, esetükben mindössze 37,5% gondolkozik a városban való szakmai végzettség megszerzésén.

2. táblázat A településen szerzendő szakmai végzettség és a nem összefüggései

			Tervezem, hogy a településen szerzek szakmai végzettséget			Összesen
			igen	nem	nem tudom	
Válaszó neme	nő	érték	144	171	69	384
		Válaszó neme %-ában	37,5%	44,5%	18,0%	100,0%
	férfi	érték	253	115	88	456
		Válaszó neme %-ában	55,5%	25,2%	19,3%	100,0%
Összesen		érték	397	286	157	840
		Válaszó neme %-ában	47,3%	34,0%	18,7%	100,0%

Forrás: saját kutatás

A helyi felsőoktatás irányába való érdeklődés ennél rosszabb képet mutat. A válaszadók 7,9%-a tervezi, hogy a városi egyetemen folytatja a tanulmányait, 63,9% biztosan nem itt tanul tovább, vagy egyáltalán nem fog továbbtanulni felsőoktatásban. 28,2% még nem döntött a kérdésben.

A keresztábra elemzés szintén igazolta az összefüggést a válaszadók neme és a helyi felsőoktatási intézmény választás között (Pearson-féle Chi-négyzet szignifikancia értéke 0,002; a kapcsolat szorosságát mutató Cramer V értéke pedig 0,121). Ez esetben is a férfi válaszadók mutatnak érdeklődést a helyi felsőoktatás iránt, bár meglehetősen alacsony arányban (az összes férfi válaszadó 9,7%-a), míg a hölgyek körében ennél is alacsonyabb

mértékű az érdeklődés, mindössze 22 női válaszadó preferálná a helyi felsőoktatási intézményt. Egyúttal az is látható, hogy a hezitálás inkább a férfiakra jellemző, a női válaszadók jelentős része (75,9%) már eldöntötte, hogy marad-e a városban, avagy máshol tervez, vagy épp nem tervez továbbtanulni.

3. táblázat A településen szerzendő felsőfokú végzettség és a nem összefüggései

			Tanulmányaimat a helyi felsőoktatási intézményben tervezem folytatni			Összesen
			igen	nem	nem tudom	
Válaszadó neme	nő	érték	22	267	92	381
		Válaszadó neme %-ában	5,8%	70,1%	24,1%	100,0%
	férfi	érték	44	266	143	453
		Válaszadó neme %-ában	9,7%	58,7%	31,6%	100,0%
Összesen		érték	66	533	235	834
		Válaszadó neme %-ában	7,9%	63,9%	28,2%	100,0%

Forrás: saját kutatás

Egyértelműen látható tehát, hogy a városi kötődés és a helyi továbbtanulási lehetőségek akár szakmai, akár felsőoktatás irányába inkább a férfiakat érdeklik, a nők jelentős része már döntött e kérdésben, s nem a helyi szakmai vagy felsőoktatási potenciált preferálják.

A Z generáció jellemzőit mutatja az is, hogy rövid távon terveznek, s alapvetően a jelenben élnek. Az elhelyezkedéssel, jövőbeni munkavállalással kapcsolatos elképzeléseik kiforratlanok. A válaszadók 42,8%-a nem tudja megítélni azt, hogy szülővárosában vannak-e olyan intézmények, ahol tanulmányait követően elhelyezkedhet. Azok között, akik döntésre jutottak a kérdésben, 18,4% igennel válaszolt, 38,8% pedig úgy gondolja, nincsenek ilyen intézmények.

A fenti témára adott válaszok szintén szignifikánsan különböznek a válaszadók neme szerint (Pearson-féle Chi-négyzet szignifikancia értéke 0,000; a kapcsolat szorosságát mutató Cramer V értéke pedig 0,155). A női válaszadók 12%-a szerint van bőven lehetőség az elhelyezkedésre, míg a férfiak körében ez az arány csaknem a duplája, 23,8%. A nők 40,1%-a, a férfiak 37,7%-a gondolja ennek ellenkezőjét. A Z generáció 'carpe diem' szemléletét tükrözi, hogy 47,9%, illetve 38,5% nem tudja megítélni a jövőbeni elhelyezkedési lehetőségeit.

4. táblázat A településen elérhető elhelyezkedési lehetőségek megítélése és a nem összefüggései

			A városban több intézmény van, ahol el tudok majd helyezkedni			Összesen
			igen	nem	nem tudom	
Válaszadó neme	nő	érték	46	153	183	382
		Válaszadó neme %-ában	12,0%	40,1%	47,9%	100,0%
	férfi	érték	108	171	175	454
		Válaszadó neme %-ában	23,8%	37,7%	38,5%	100,0%
Összesen		érték	154	324	358	836
		Válaszadó neme %-ában	18,4%	38,8%	42,8%	100,0%

Forrás: saját kutatás

Az elvándorlás mértékét pedig az szemlélteti legjobban, hogy a 840 diákból 471 (56,1%) egyértelműen úgy fogalmazott, hogy nem tervez a városban maradni tanulmányainak befejezése után. 35% még bizonytalan, s csupán 74 fő (8,8%) jelezte, hogy a vizsgált településen kíván maradni a jövőben is.

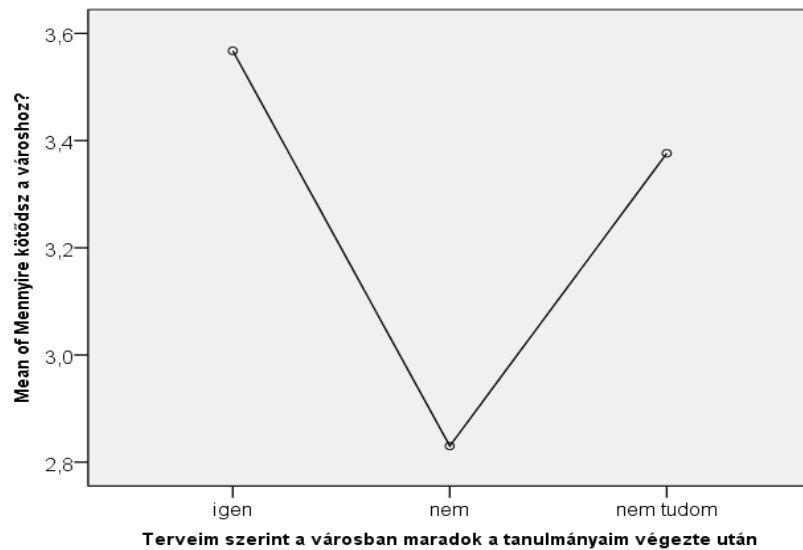
A település iránti kötődés és a fentiekben bemutatott elvándorlás mértéke közötti összefüggés varianciaelemzéssel is igazolható.

5. táblázat Varianciaelemzés a városhoz kötődés és az elvándorlás változók között (ANOVA tábla)

ANOVA					
Mennyire kötődsz a városhoz					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	72,848	2	36,424	34,495	,000
Within Groups	883,808	837	1,056		
Total	956,656	839			

Forrás: saját kutatás

Az alábbi means plot ábrán is látható, hogy azon válaszadó fiatalok, akik a városban tervezik jövőjüket a tanulmányaik befejezése után, átlagosan csaknem 3,6-ra értékelték a város iránti kötődésüket. Azok, akik nem helyben tervezik a jövőjüket, 2,8-as átlagértékű kötődésről számoltak be.

5. ábra: A városhoz való kötődés és az elvándorlási hajlandóság összefüggésének ábrázolása

Forrás: saját kutatás

A 6. táblázatban látható statisztikai adatok azt mutatják, hogy a válaszopciók páronkénti összehasonlítása során szignifikáns különbség a fenti kérdésre igennel és nemmel felelők között van. Azon fiatalok, akik a városban terveznek maradni, magasabb kötődést is éreznek a város iránt (3,6), míg a nem a városban tervezők kötődése jóval alacsonyabb (2,8). Szintén szignifikáns a különbség a kérdésre nemmel válaszolók valamint a nem tudom válaszokat adók véleménye között, amiből arra következtethetünk, hogy akik egyértelműen nem kötődnek a városhoz, ők szinte biztosan nem itt fognak eltelepedni, míg a hezitálók városhoz való kötődése alapvetően magasabb. Az igennel válaszolók és a nem tudom választ adók véleménye nem tér el egymástól szignifikánsan.

6. táblázat Varianciaelemzés a városhoz kötődést és az elvándorlás változók között

Függő változó: Mennyire kötődsz a városhoz?							
	(I) Terveim szerint a városban maradok a tanulmányaim végezte után	(J) Terveim szerint a városban maradok a tanulmányaim végezte után	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
LSD	igen	nem	,737*	,128	,000	,49	,99
		nem tudom	,191	,134	,153	-,07	,45
	nem	igen	-,737*	,128	,000	-,99	-,49
		nem tudom	-,546*	,076	,000	-,70	-,40
	nem tudom	igen	-,191	,134	,153	-,45	,07
		nem	,546*	,076	,000	,40	,70

Forrás: saját kutatás

A fenti eredmények kezdeti feltételezésem utolsó szakaszát is beigazolták. A vizsgált magyarországi középvárosban a fiatalok elvándorlási hajlandósága kiemelten magas. Ez az eredmény pedig igazolja és alátámasztja azt a kutatási irányt, amelybe jelen tanulmány háttéréül szolgáló kutatói pályázatomban belekezdtem. A fiatalok elvándorlása immáron nem csak a falvakat érinti, hanem a kis és középvárosok számára is hasonlóan negatív perspektívát mutatnak az eredmények.

ÖSSZEGZÉS, KÖVETKEZTETÉSEK

Kutatásom célja az volt, hogy egy magyarországi középváros példáján keresztül rámutassak a Z generáció települési kötődésének hiányára, továbbá felhívjam a figyelmet azon problémára, amely a falvak és a kisvárosok után a középvárosokat is eléri: a jelentős mértékű elvándorlás és népességszám csökkenés.

Jelen tanulmány egyfajta esettanulmányként egy magyarországi középváros példáját dolgozza fel, s a 840 itt tanuló középiskolás diák körében végzett kérdőíves felmérés eredményeit összegzi. A tanulmány a következő feltételezéssel élt: *A kiválasztott település példája jól szimbolizálja a magyarországi Z generáció problémáját: az eddigi életük során nem alakult ki erős kötődés a lakóhelyük iránt, s mivel a települést nem látják olyan helynek, ahol a jövőjüket elképzelik, ezért a fiatalok elvándorlási hajlandósága kiemelten magas.*

A Z generációnak nevezett fiatalok jelenleg 9-23 évesek, az általunk vizsgált személyek 14-18 év közöttiek. Annak ellenére, hogy a közösséghez tartozás és a csapatszellem kiemelten fontos értéknek minősül a generáció számára, a vizsgált fiatalok ezt a fajta identitást a település vonatkozásában nem érzik. Sokkal inkább kötődnek a barátaikhoz, iskolatársaikhoz, mint a településhez, városhoz, ahol élnek. Ezt mutatja az identitás erősségét bemutató táblázat és ábra is, ahol látható, hogy a településhez való kötődésük 3,09-es átlagértékű egy ötfokozatú skálán mérve. A kötődésük hiányára vonatkozó felvetés tehát beigazolódni látszik.

Egy szabad asszociációs kérdés formájában tártuk fel, hogy a vizsgált városról alkotott kép mennyire egyezik meg azon értékrenddel, jellemzőkkel, amelyekkel a Z generáció tagjai bírnak, vagy legalábbis amelyeket értékelnek. A vizsgált magyarországi középváros a legtöbb válaszadót egy lajhárra emlékeztette, amely lassú és unalmas. Bár számos pozitívumot (szép, védelmező, bátor) is megemlítettek a fiatalok, összességében ezek nincsenek összhangban azon értékekkel, amelyek a generáció számára vonzóak (jókedv, sebesség, innováció, szabadság, együttműködés stb.). Annak ellenére, hogy a válaszokból úgy tűnik, a fiatalok még nem tervezik a jövőjüket közvetlenül, elmondhatjuk tehát, hogy a települést nem látják olyan helynek, ahol a jövőjüket elképzelik.

Végül a vizsgált célcsoport továbbtanulási és munkába állási szándékait vizsgálva azon eredményre jutottunk, hogy a megkérdezettek 47,3%-a szeretne szülővárosában szakmai végzettséget szerezni; 7,9%-a tervezi, hogy a városi egyetemen folytatja a tanulmányait; 42,8%-a nem tudja megítélni azt, hogy szülővárosában van-e több olyan intézmény, ahol tanulmányit követően elhelyezkedhet; 56,1%-a pedig egyáltalán nem tervez a városban maradni tanulmányainak befejezése után. Megállapíthatjuk, hogy a vizsgált városban élő fiatalok elvándorlási hajlandóság kiemelkedően magas, a középiskolások több mint fele nem tervez a lakhelyén maradni.

Nem meglepő módon egyértelmű összefüggés mutatható ki ugyanakkor a városhoz való kötődés és a helyben maradási szándék között: a varianciaelemzés igazolta, hogy a magasabb kötődéssel bírók nagyobb valószínűséggel tervezik, hogy jövőjüket is a vizsgált városban töltik.

Kutatásom folytatásként folyamatban van a települési stakeholderek kvalitatív típusú megkérdezése, amely során a város nem üzleti típusú szereplőinek (közszolgáltatók, közüzemek és non profit szereplők) véleményét tárom fel a Z generáció helyben tartásának lehetőségeiről.

SUMMARY

My research focuses on the settlement aspects of nonbusiness marketing. It highlights a problem, which today many domestic and rural communities are struggling with: the out-migration of young people. This long-lasting problem in the rural environment has continued in the 2010s and affects not only villages, small towns but mid-sized cities, as well. Many research results indicate that the retention of a young workforce is a generic problem in Hungary today, almost in every settlement. Based on Stadman the individuals are not insisting on the physical nature of their environment but on the experiences they attain (Stadman, 2002). Knez (2005) complemented the above with the fact, that all of the experiences have the greatest effect when talking about childhood experiences, since in such cases the attachment is personally related. That is why in my research I am focusing on the identity strength of the Z generation: the identity, which has been formed during their childhood and adolescence, can play key roles in their retention in the city.

In my paper, I accept the fact that identity can only be built on existing opinions and impressions, but I also believe that these impressions can be shaped. The most important starting point for settlement identity is the "my consciousness" of the people living there, and the real identity what can be developed by the improvement of the relationship between the inhabitants and the local government.

Beside the different approaches of identity and also the values that are important to the high school students, as the members of generation Z, I also analyzed, their bondages to the settlement where they live.

The generation Z means those young people, who were born after 1995. The members of the Z generation are currently in 2018 in the phase of life, in which they are looking for their own identity. However, according to Tari, they are the first true global generation (Homo Globalis).

In the empirical research the case of a Hungarian mid-sized city is examined. The purpose of this study is to explore the strength of young people's urban attachment and the way how they see the city.

My starting hypothesis was the following: the example of the chosen settlement symbolizes the problem of the Z generation in Hungary: no strong attachment to their place of residence has emerged in their lives so far, and since the settlement is not seen as a place where their future is imagined, young people's aspiration to emigrate is extremely high. To answer the above research question and to confirm the

assumption I took a comprehensive questionnaire survey conducted in 2017. The secondary school of the town was chosen for the survey, 840 young people completed the questionnaire between February and May 2017.

Based on the literature overview and the case of the Hungarian mid-sized city I concluded that the generation Z has not real connection to this special town, where they live, they do not see the place as an attractive venue and do not plan their future in the examined settlement. This not favorable result has the message that this town, and maybe also the other Hungarian mid-sized cities should re-think their PR activities and the steps in order to improve the identity.

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TERRITORIAL IMPACT ASSESSMENT: COHESION POLICY AND BALANCED TERRITORIAL DEVELOPMENT (CZECHIA)

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Abstract

The intent of this paper is to add to the current knowledge in the field of TIA modelling by presenting a case study of cohesion policy (CP) in Czechia, 2007-2013. The empirical results are mixed. While the territorial impact of CP interventions concerning the NSRF objective of a 'Competitive Czech Economy' is higher in main metropolitan regions, CP interventions concerning the NSRF objectives of an 'Open, Flexible and Cohesive Society' and of an 'Attractive Environment' have higher impacts in regions with more desire for CP interventions. Consequently, territorial impacts of the three NSRF objectives are contrary to one another, and the observed pattern of overall territorial impacts of CP interventions is patchy, almost mosaic-like. Additionally, the paper suggests some methodological ideas for TIA modelling drawing inspirations from the prominent TEQUILA model. In particular, the spatial distribution of SF is used to model the intensity of CP interventions in a territory. A methodology how to model the potential territorial impact and the desirability of CP interventions in a territory is also presented.

Keywords: Territorial Impact Assessment (TIA), Cohesion Policy, territorial goals, Czechia

INTRODUCTION

Since its first mention in the Amsterdam Treaty, territorial cohesion has become increasingly significant in EU policy agenda (see, e.g., Davoudi, 2005; Cotella, Adams and Nunes, 2012). Servillo (2010) stressed the importance of linking territorial cohesion to economic development, while Davoudi (2005), Elissalde and Santamaria (2014), Colomb and Santinha (2014), and Faludi (2005) point out the relationship between territorial and social cohesion in the 'European Social Model', noting that nobody should be disadvantaged by their place of residence. However, despite its increasing significance, the concept of territorial cohesion is still somewhat vague because there is a variety of definitions in literature concerning this

topic (see, e.g., Camagni, 2017; Servillo, 2010; Nosek, 2017; Golobič and Marat, 2011; Camagni, 2009).

Historically, the concept of territorial cohesion relates to the EU objective of preventing large territorial disparities (see, e.g., Camagni, 2009; Nosek, 2017; Servillo, 2010). With this line of reasoning, it is expected that policy instruments aim to support lagging regions in order to reduce territorial disparities and to achieve balanced territorial development and ‘territorial justice’ (see, e.g., Malý and Mulíček, 2016; Colomb and Santinha, 2014; Colomb and Santinha, 2014). As Colomb and Santinha (2014), Camagni (2009) note, special attention is given to some types of territories, e.g., rural areas, declining urban areas, remote territories and others. However, several additional aspects regarding the concept of territorial cohesion deserve special mention:

- Firstly, the concept of territorial cohesion emphasises that public services – or services of general interest – should be provided within reasonable distances of all people. Hence, also people living in peripheral regions are expected to have access to these types of services (see, e.g., Colomb and Santinha, 2014; Cotella, Adams and Nunes, 2012; Servillo, 2010; Faludi, 2005; Colomb and Santinha, 2014).
- Secondly, all territories are considered to have developmental potential, which should be identified, strengthened and exploited. Hence, endogenous development and place-based development are associated with the concept of territorial cohesion (see, e.g., Bentley and Pugalis, 2014; Colomb and Santinha, 2014; Abrahams, 2014). It is worth noting that also territorial competitiveness closely relates to this aspect of territorial cohesion.
- Thirdly, sectoral policies are likely to have significant territorial impacts. The concept of territorial cohesion therefore emphasises the need for coherence between the two types of policies on the basis of integrating the development strategies (see, e.g., Cotella, Adams and Nunes, 2012; Davoudi, 2005; Greiving, Fleischhauer, Tarvainen, Schmidt-Thomé and Jarva, 2008; Faludi, 2005). Note that all thematic dimensions of sustainable development are relevant here (see, e.g., Medeiros, 2012; Nosek, 2017; Colomb and Santinha, 2014).

Different aspects of the concept of territorial cohesion are interlinked, and thus, there is a potential conflict between them. In this regard, the main discussion focusses on the tensions between territorial competitiveness aims and ‘territorial justice’ aspirations (see, e.g., Luukkonen and Moilanen, 2012; De Propriis, 2007; Servillo, 2010). It was these tensions that broadened the concept of territorial cohesion to also include the emphasis on polycentric

territorial development and territorial cooperation (see, e.g., Zaucha, Komornicki, Böhme, Świątek and Žuber, 2014; Davoudi, 2005; Medeiros, 2012). As Malý and Mulíček (2016) claim, polycentric territorial development recognizes the potential for metropolitan areas to generate economic competitiveness. Territorial cooperation and functional links improve ‘territorial justice’ through developing strong metropolitan areas in peripheral regions (see, e.g., Medeiros, 2012). Hence, polycentric development may be perceived as a bridging concept concerning cohesion and competitiveness (see, e.g., Malý and Mulíček, 2016; Veneri and Burgalassi, 2012).

In light of increasing significance in the concept of territorial cohesion, the interest in territorial impact assessment (hereafter referred to as TIA) has recently grown (see, e.g., Camagni, 2009). TIA is relevant for all policies and instruments that have territorial impacts, and this was used in EU transport policy assessments (see, e.g., Camagni, 2009), and also for Slovenian energy policy (see, e.g., Golobič and Marat, 2011), cohesion policy in Portugal (see, e.g., Medeiros, 2014; Medeiros, 2012), cohesion policy in Spain (see, e.g., Medeiros, 2017), EU environmental legislation (see, e.g., Greiving, Fleischhauer, Tarvainen, Schmidt-Thomé and Jarva, 2008; Fischer et al., 2015), and the Slovenian NATURA 2000 programme (see, e.g., Marat, Kolarič and Golobič, 2013). Nevertheless, despite the increasing number of applications, there is no particular TIA methodology that has been established as conclusively superior to others (see, e.g., Golobič and Marat, 2011; Greiving, Fleischhauer, Tarvainen, Schmidt-Thomé and Jarva, 2008).

Golobič and Marat (2011), and Medeiros (2014) outline three general methodological steps regarding TIA methodology: (a) the definition of the scope and framework of TIA (e.g., source of territorial impacts, territorial units of assessment, time of assessment – ex-ante or ex-post, territorial objectives); (b) identification of causal mechanisms (e.g., policy objectives and influencing factors); and (c) empirical assessment. On this basis, several TIA models were developed and used, including the prominent TEQUILA model (see, e.g., Camagni, 2009; Greiving, Fleischhauer, Tarvainen, Schmidt-Thomé and Jarva, 2008), the TARGET-TIA model (see, e.g., Medeiros, 2014; Medeiros, 2012), and the EATIA model (see, e.g., Fischer et al., 2015). The main characteristics of these models may be briefly outlined as follows (see, e.g., Camagni, 2009; Golobič and Marat, 2011; Medeiros, 2014):

- TIA models relate to the concept of territorial cohesion, and they consider a variety of definitional aspects, which are utilised using relevant and scaled indicators.

- The associations between policy inputs and impacts, the intensity of policy interventions in a territory; and the desirability of policy interventions in a territory are all considered in calculating territorial impacts.
- As indicated by TIA models, other factors may also be taken into account such as territorial vulnerability, substitution effects, sustainability of impacts, and territorial closeness of effects.

The intent of this paper is to add to the current knowledge in the field of TIA modelling by presenting a case study of cohesion policy in Czechia, 2007-2013 (hereafter referred to as CP). The main characteristics of TIA models are regarded for this purpose. Firstly, CP interventions are assessed in terms of them being the source of territorial impacts. The intensity of policy interventions in a territory is determined by the pattern of CP territorial expenditures.

Secondly, the impacts of CP expenditures are defined with reference to the three strategic objectives of the ‘National Strategic Reference Framework of the Czech Republic 2007-2013’ (hereafter referred to as NSRF): (a) a ‘Competitive Czech Economy’; (b) an ‘Open, Flexible and Cohesive Society’; and (c) an ‘Attractive Environment’ (see, e.g., MRD CR, 2007). Thirdly, the desirability of policy interventions in a territory is operationalized and measured using composite indicators that relate to the three NSRF objectives. Fourthly, results are discussed in light of balanced territorial development, which is one of the tenets of territorial cohesion, and these characteristics are used as a guiding framework. Hence, a TIA model based on robust empirical grounds is suggested. In this context, it is noteworthy that a number of authors such as Medeiros (2015), Golobič and Marat (2011) argue that TIA modelling has a lack of ‘hard quantitative data’ and an over-reliance on subjective-based judgements.

This paper is structured as follows: the second section provides the objectives and methods. The third section presents results, which are then discussed in the following section. The last section provides a conclusion.

OBJECTIVES AND METHODS

The main objective of this paper is to assess territorial impacts of CP interventions using TIA modelling and to discuss results relating to balanced territorial development. The methodology is based on the theoretical framework presented in the introduction. The starting point is the equation inspired by the prominent TEQUILA model (see, e.g., Camagni, 2009):

$$TIM_r = \sum_o D_{r,o} PIM_{r,o} ,$$

where TIM_r shows territorial impacts of CP interventions on a region r ; $PIM_{r,o}$ is potential territorial impact of CP interventions that relate to an objective o on a region r ; and $D_{r,o}$ is the desirability of CP interventions that relate to an objective o in a region r . TIM_r , therefore, aggregates territorial impacts for the three NSRF objectives. All calculations are based on 206 Czech regions between level LAU1 and LAU2.

The potential territorial impact $PIM_{r,o}$ is calculated as a product of two components: (1) the general impact of CP interventions on the three NSRF objectives; and (2) the intensity of CP interventions (refer to e.g., Camagni, 2009 for this approach). For this purpose, two matrices are used. The first matrix contains priority axes of thematic and regional operational programmes under the Convergence and Regional Competitiveness and Employment objectives (hereafter referred to as priority axes) in rows, and contains the three NSRF objectives in columns. The general impact of each priority axis on each NSRF objective is determined using the intervention logic described in the NSRF and also by using expert judgements. The impact is rated on a four-point scale (from 0 to 3) ranging from ‘no impact – 0’ to a ‘very strong impact – 3’ (see, e.g., Camagni, 2009; Medeiros, 2014 for the use of scales), and using a three-step procedure as follows.

Firstly, the impact of each priority axis on each NSRF objective is evaluated according to three criteria: (1) the first criterion relates to the question whether the impact of a priority axis on a NSRF objective is explicitly mentioned in the NSRF content; (2) the second criterion relates to the question whether priority axis indicators are of relevance to a NSRF objective; (3) the third criterion relates to the question whether the link between priority axis indicators and a NSRF objective may be regarded as a strong link, considering ex-ante expected outcome values. The number of ‘yes’ responses determines the impact of each priority axis on each NSRF objective on a four-point scale. Secondly, five experts independently explore the impacts of each priority axis on each NSRF objective as these were rated in the first step of the procedure. On this basis, suggestions for change are gathered and these are discussed in the third step of the procedure and eventually made.

The second matrix contains regions in rows and the priority axes in columns. Structural fund (hereafter referred to as SF) allocation per one inhabitant – the intensity of CP interventions – is assigned to each priority axis and each region, and the values are transformed to fall within a range of zero to one. Here, zero is no SF allocation and one is the highest SF allocation among all the regions. The fact that particular priority axes have different weights is considered by multiplying the transformed values in the matrix by the

share of the total SF allocation for corresponding priority axes. The main sources of information as of June 2016 are from the official data published by the Ministry of Regional Development of the Czech Republic (hereafter referred to as the MRDCR), by the Ministry of Industry and Trade of the Czech Republic (hereafter referred to as the MITCR), and also by the Ministry of Labour and Social Affairs of the Czech Republic (hereafter referred to as the MLSACR). Hence, the potential territorial impact $PIM_{r,o}$ expresses the impact of CP interventions in a region r with respect to an objective o .

The desirability of CP intervention that relates to an objective o in a region r is calculated on the basis of composite indicators that date from the beginning of the programming period 2007-2013. For each of the three NSRF objectives, Tab. 1 reviews individual indicators that are aggregated to a composite indicator as the mean of their z-transformed values. Moreover, all individual indicators are expressed in such a way that higher values imply higher desirability of CP interventions. Finally, the values of the three composite indicators are transformed to fall in a range between one and two, where one is the lowest desirability and while two is the highest desirability of CP interventions (see, e.g., Camagni, 2009 for a similar approach). The total desirability of CP interventions is calculated as the mean of the three composite indicators.

The above-mentioned methodology is applied to separately calculate TIM_r for each of the NSRF objectives, and also for all the objectives together. Two approaches are then used to assess the relationship between CP interventions and balanced territorial development, hypothesizing that CP interventions contribute to balanced territorial development. Firstly, regions are divided into quartiles according to the composite indicators for desirability of CP interventions. The average TIM_r values are calculated for each of the quartiles. To meet the goal of contributing to balanced territorial development, it is assumed that the average TIM_r values of the first and second quartiles are relatively high, while the average TIM_r values of the third and fourth quartiles are relatively low. The significance of mean differences is tested by the analysis of one-way variance (ANOVA). The same rationale is applied to the second approach that is based on the correlations between the $PIM_{r,o}$ and $D_{r,o}$ values. A negative and significant sign of the correlation coefficients accords with balanced territorial development.

Table 1 Overview of individual indicators

NSRF objective	Individual indicator (year)	Source
Competitive Czech Economy	The number of patent applications and utility models per 100.000 inhabitants (2002-2007)	IPOCR
	The share of researchers and professionals in the economically active population (mean of 2001 and 2011)	CSO
	The share of unemployed people in the population aged 15-64 years (2005-2007)	CSO
	Tourism potential, log-transformed (2005)	CSO
Open, Flexible and Cohesive Society	The share of unemployed people in the population aged 15-64 years (2005-2007)	CSO
	The share of people receiving living allowances in the population aged 15-64 years (2007-2008)	GAC
	The share of households with internet access in the total number of households (mean of 2001 and 2011)	CSO
Attractive Environment	The emission values of nineteen air pollutants per square kilometre (2007)	CHMI
	The ratio between environmentally stable and environmentally unstable land-use categories (2007)	CSO
	The share of population with access to sewerage infrastructure (mean of the years 2001 and 2011)	CSO
	Composite indicator (2009) showing relative total waste production, household waste production and waste dumping	MoECR
	The (external) accessibility of the core regional city (2005) – individual transport	CSO
	The (internal) accessibility of the core regional city within the region (2005) – individual transport	CSO

Source: CHMI – Czech Hydrometeorological Institute; CSO – Czech Statistical Office; GAC – the Map of Socially Excluded Communities; IPOCR – Industrial Property Office of the Czech Republic; MoECR – Ministry of Environment of the Czech Republic

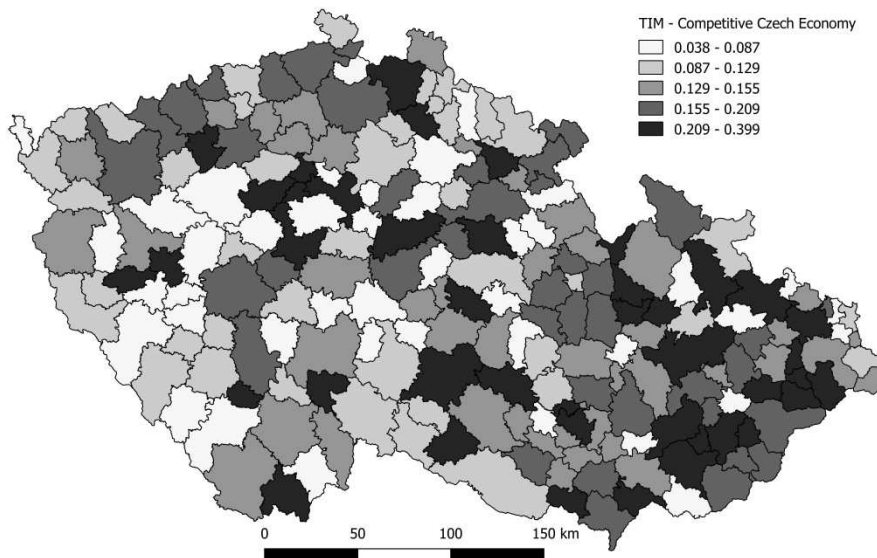
RESULTS

Empirical results are first presented using choropleth maps to visualize how TIM_r values vary across regions. In this regard, four maps are displayed in figures 1 to 4. The first three maps show the TIM_r values for the three NSRF objectives separately, while the last figure shows the aggregate TIM_r values. The maps provide initial insights regarding the spatial variation of TIM_r values.

Concerning the objective of a ‘Competitive Czech Economy’ (fig. 1), an uneven spatial distribution of TIM_r values is demonstrated. However, spatial hierarchy appears to play a role in this distribution, indicating that the main metropolitan areas have higher TIM_r values.

Prague is a notable exception to this rule due to its ineligibility to receive funds under the generous Convergence objective. However, Prague’s low value here is at least partially compensated by high values for regions in close proximity to Prague. Additionally, there is a tendency in the eastern regions to have higher TIM_r values than those in the western regions.

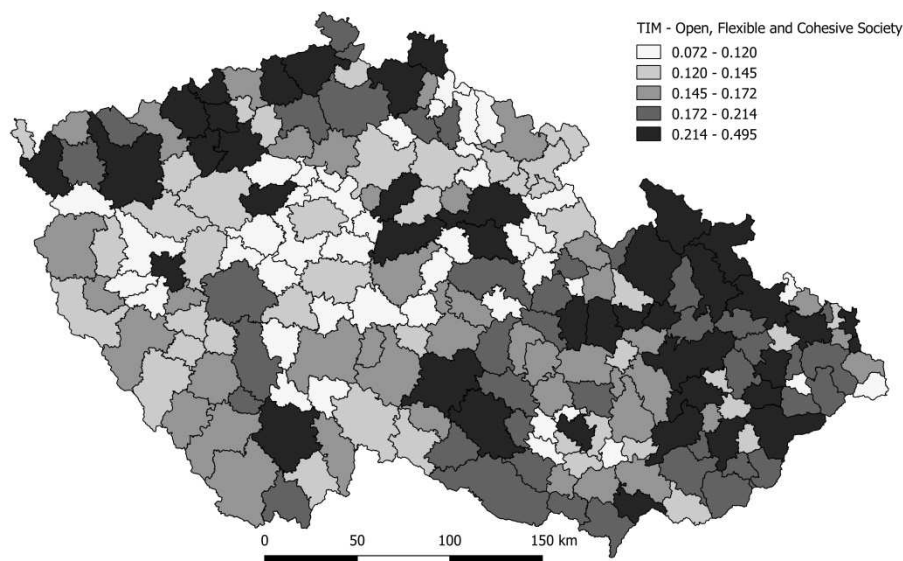
Figure 1 TIM_r for the NSRF objective of a ‘Competitive Czech Economy’



Source: own elaboration based on the data from the CHMI, the CSO, the GAC, the IPOCR, the MILSACR, the MITCR, the MoECR, and the MRDCR

Concerning the objective of an ‘Open, Flexible and Cohesive Society’ (fig. 2), spatial clusters of regions with high TIM_r values are found in north-western Bohemia and north-eastern Moravia. A number of these areas are referred to as structurally disadvantaged regions that suffer from economic decline, industrial downsizing and adverse social conditions. Similarly to fig. 1, it is also noticed that there is a tendency that the eastern regions have higher TIM_r values than western regions, see fig. 2.

Figure 2 TIM_r for the NSRF objective of an ‘Open, Flexible and Cohesive Society’

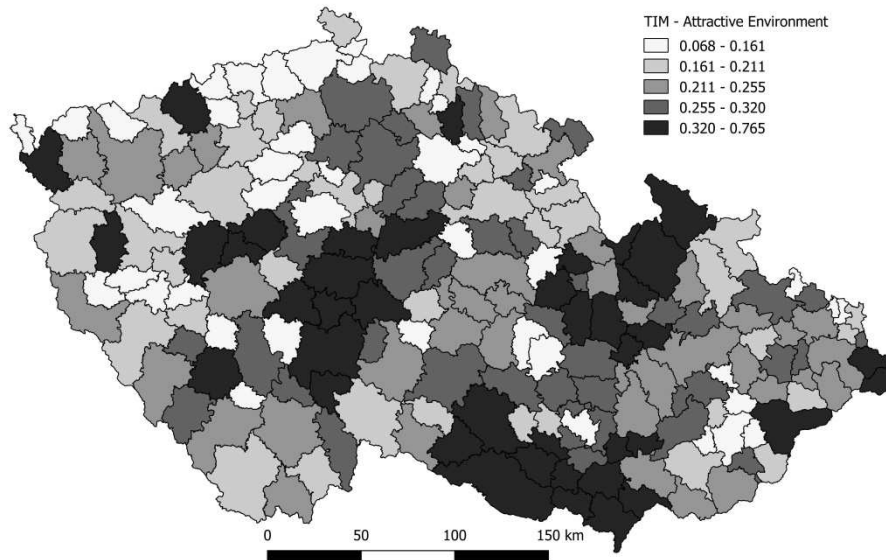


Source: own elaboration based on the data from the CHMI, the CSO, the GAC, the IPOCR, the MILSACR, the MITCR, the MoECR, and the MRDCR

Fig. 3 suggests the highest level of spatial clustering of regions with similar TIM_r values for the objective of an ‘Attractive Environment’, as also indicated by Moran’s I statistic (i.e., 0.067 for the objective of a ‘Competitive Czech Economy’; 0.071 for the objective of an ‘Open, Flexible and Cohesive Society’; and 0.239 for the objective of an ‘Attractive Environment’). Three spatial regional clusters with high values may be identified in central Bohemia, southern Moravia and north-eastern Moravia. In this regard, the line character of large transport projects is important to explain the spatial concentration of high TIM_r values for the objective of an ‘Attractive Environment’.

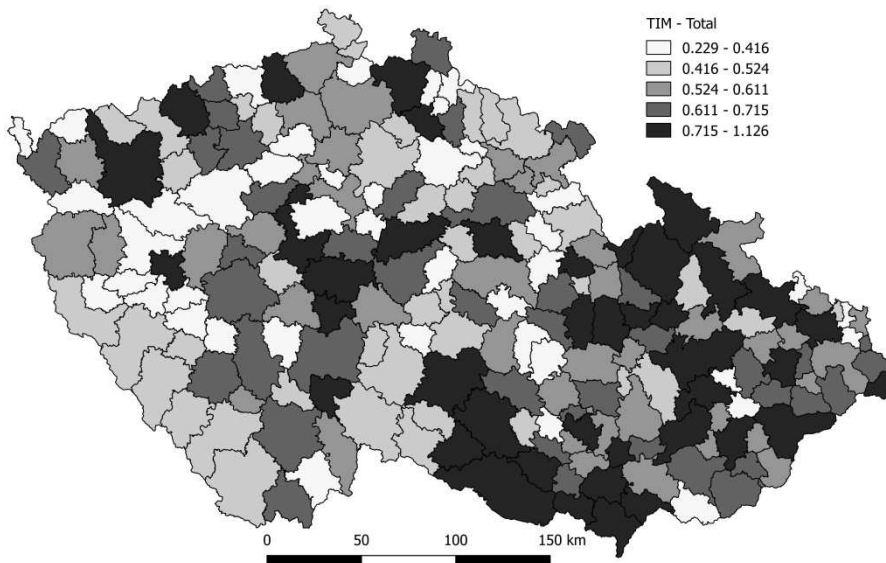
Altogether, a mosaic spatial pattern of aggregate TIM_r values is formed due to the different territorial impacts of interventions relating to the three NSRF objectives (see fig. 4). This is also confirmed by insignificant Moran’s I statistics (0.080) at the 1% level. The question is thus about what information is contained of the balanced territorial development in TIM_r values. It seems that different types of regions are favored when considering the objective of a ‘Competitive Czech Economy’ on the one hand and the objective of an ‘Open, Flexible and Cohesive Society’ on the other hand. Therefore, this particular question is dealt with in the remaining part of this section.

Figure 3 TIM_r for the NSRF objective of an ‘Attractive Environment’



Source: own elaboration based on the data from the CHMI, the CSO, the GAC, the IPOCR, the MILSACR, the MITCR, the MoECR, the MRDCR

Figure 4 TIM_r for all the NSRF objectives together



Source: own elaboration based on the data from the CHMI, the CSO, the GAC, the IPOCR, the MILSACR, the MITCR, the MoECR, and the MRDCR

Tab. 2 provides the arithmetic means of TIM_r for the regions classified into quartiles according to the composite indicators for the desirability of CP interventions. In this regard, the 4th quartile includes the regions where CP interventions are most needed. The opposite is true for the regions classified into the 1st quartile. The most important findings can be summarized as follows:

- Concerning the objective of a ‘Competitive Czech Economy’, ANOVA indicates the high arithmetic mean of TIM_r for the 1st quartile of regions as the only significant difference compared to the arithmetic mean of the 2nd quartile of regions. Nonetheless, the mean differences between the 1st quartile of regions on the one hand, and the 3rd and 4th quartiles of regions on the other hand, are not statistically significant.
- Concerning the objective of an ‘Open, Flexible and Cohesive Society’, ANOVA indicates the high arithmetic mean of TIM_r for the 4th quartile of regions as the only significant difference between the four quartiles of regions. The significance holds for all the pairs of comparisons that include the 4th quartile of regions.
- Concerning the objective of an ‘Attractive Environment’, the significant differences reported by ANOVA include the following pairs of quartiles: (a) 1 and 4; (b) 2 and 4; and (c) 1 and 3. Hence, territorial impacts seem to reflect the desirability gradient for the objective of an ‘Attractive Environment’.

Altogether, a complex picture arises because the CP interventions relating to the three NSRF objectives work contrary to one another. This can also be seen in the lack of statistical significance in all the pair-wise comparisons for the three NSRF objectives together (see tab. 2; the last column).

Table 2 The arithmetic means of TIM_r

Regions	Competitive Czech Economy	Open, Flexible and Cohesive Society	Attractive Environment	All objectives together
1 st quartile	0.175	0.163	0.193	0.583
2 nd quartile	0.135	0.160	0.230	0.537
3 rd quartile	0.150	0.168	0.278	0.590
4 th quartile	0.146	0.214	0.304	0.579

Source: own elaboration based on the data from the CHMI, the CSO, the GAC, the IPOCR, the MILSACR, the MITCR, the MoECR, and the MRDCR

The correlation coefficients between the $PIM_{r,o}$ and $D_{r,o}$ values confirm the relevance of the above-mentioned findings (see tab. 3). Hence, the potential territorial impact of CP interventions is inversely and significantly associated with the desirability of CP interventions for the objective of a ‘Competitive Czech Economy’, while directly and significantly associated with the remaining two NSRF objectives. The significance is lost in aggregate evaluation.

Table 3 The correlation coefficients between the $PIM_{r,o}$ and $D_{r,o}$ values

	Competitive Czech Economy	Open, Flexible and Cohesive Society	Attractive Environment	All objectives together
Correlation coefficients	-0.213**	0.156*	0.240**	-0.079

** statistically significant at the 0.01 significance level; * statistically significant at the 0.05 significance level

Source: own elaboration based on the data from the CHMI, the CSO, the GAC, the IPOCR, the MILSACR, the MITCR, the MoECR, and the MRDCR

DISCUSSION

The empirical results presented in the preceding section can be embedded in a broader theoretical context. Firstly, a number of studies have emphasized the influence of spatial factors on regional inequalities in post-communist countries (see, e.g., Ezcurra, Pascual and Rapún, 2007; Maier and Franke, 2015; Czyz and Hauke, 2011; Krzysztofik, Tkocz, Spórna, & Kantor-Pietraga, 2016; Martinát et al., 2016; Ženka, Novotný, Slach and Květoň, 2015; Marková and Švihlíková, 2016; Skokanová, Havlíček, Klusáček, & Martinát, 2017; Navratil et al., 2018). Three factors are usually expected to be significant in this respect: (a) spatial hierarchy and the advantages of location in the main metropolitan regions; (b) the eastern-western gradient and the advantages of location close to the borders of western countries; and (c) the inherited spatial specialization and the structural disadvantages of particularly old industrial regions. The importance of these factors was also demonstrated in the TIA models constructed, i.e., the importance of spatial hierarchy for the objective of a ‘Competitive Czech Economy’, the importance of inherited spatial specialization for the objective of an ‘Open, Flexible and Cohesive Society’, and the importance of the eastern-western gradient for all the NSRF objectives. Generally, the influence of the three spatial factors needs to be considered in planning territorial impacts for CP interventions.

Secondly, the empirical findings are relevant for the debate about the relationship between two spatial objectives – territorial competitiveness and territorial balanced development (see, e.g., Vanolo, 2010; Colomb and Santinha, 2014). The constructed TIA models suggest that CP interventions work in either direction, depending on their thematic orientation (see, e.g., Klímová and Žítek, 2015; Hájek and Górska-Szymczak, 2017; Kaufmann and Wagner, 2005; Severová, Chromý, Sekerka and Soukup, 2012 for relatively low impact innovation-oriented interventions in lagging regions). Therefore, the combined effects of CP interventions can undermine their overall contribution to balanced territorial development (see also Novosák,

Hájek, Horváth and Nekolová, 2017 for this conclusion). The weight given to particular types of CP interventions and their links to the two spatial objectives are crucial for evaluating which of the objectives prevail.

Thirdly, the TIA models constructed extend the methodology of TIA modelling in some directions. This is the primary way of treating the potential territorial impact of CP interventions (PIM_r), which are operationalized using ‘hard data’ relating to the spatial distribution of CP interventions. Moreover, NSRF is taken as the main source for the gauging general impacts of CP interventions on the three NSRF objectives, and also the weights of objectives are set in a way that differs from previous studies and it relies more on ‘hard data’. Generally, the constructed TIA models are less subjective in nature, thereby we can at least partially remove one of the drawbacks of TIA methodologies (see, e.g., Golobič and Marat, 2011; Medeiros, 2015 for the problem of subjectivity in TIA modelling).

CONCLUSION

The intent of this paper is to add to the current knowledge in the field of TIA modelling by presenting a case study of cohesion policy in Czechia (2007-2013). The findings point out the need to address the complex nature of territorial impact of CP interventions. The territorial impact of CP interventions relating to the NSRF objective of a ‘Competitive Czech Economy’ is greater in the main metropolitan regions, but CP interventions relating to the NSRF objectives of an ‘Open, Flexible and Cohesive Society’ and of an ‘Attractive Environment’ have greater territorial impacts in regions with higher desirability for interventions. Consequently, there is a mosaic pattern of overall territorial impacts of CP interventions, with different conclusions regarding their contributions to balanced territorial development, and the hypothesis that CP interventions contribute to balanced territorial development cannot be conclusively accepted.

There are several political implications that can be drawn from this research. Firstly, the overall assessment of territorial impacts of CP interventions masks the complexities that arise from their thematic decomposition. Therefore, it is desirable to deal precisely with the thematic dimension of both CP interventions and TIA modelling. Secondly, it is important to define the relationship between the two spatial objectives of CP interventions: (a) territorial competitiveness; and (b) balanced territorial development. A particular question exists about whether the desirability of CP interventions relating to the competitiveness objective is greater in the main metropolitan regions or whether it is greater in lagging regions. Thirdly,

implementing the ideas introduced in this paper can bring fruitful results in ‘less subjective’ TIA modelling.

In our opinion, the results of this study can be helpful in order to provide methodological guidance for practitioners. In particular, the methodology is useful for both ex-ante policy analyses and ex-post policy analyses of territorial impacts. While the former analyses provide information about the most suitable course of action, the latter analyses indicate whether the actual choice was the most suitable. However, there are some limitations of using the methodology and two of them are worth mentioning. Firstly, the matrix of general impacts of CP interventions on the NSFR objectives can be improved by calibrating the impacts against achieved outcome indicator values. Secondly, an outflow of SF to other regions (e.g., through public procurements) ought to be considered in order to enhance our understanding of the phenomenon.

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ASSESSMENT OF THE INTERRELATIONS BETWEEN HEALTH AND HOUSING CONDITIONS IN A HUNGARIAN ROMA SETTLEMENT

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Abstract

Health is our most important value and resource – its preservation and development are crucial in terms of our quality of life and work. Health status is mainly influenced by lifestyle, health consciousness and the healthcare system, the accessibility and quality of health-related services. Rich literature discusses the relationship between housing conditions and health status as well. The disadvantaged socio-economic situation causes deteriorated living environments and, hence, the decline in health. Through the case of the Hungarian village of Bag and the Roma settlement located there, I would like to highlight the connection between housing conditions and health.

Keywords: housing, health, Roma settlement, Hungary, Bag

INTRODUCTION

The concept of health was defined in 1946 at the establishment of the World Health Organization in Geneva as follows: „Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” (WHO, 1946) The document of the organization of 1979 entitled ‘Global strategy for health for all by the year 2000’ distinguishes the following dimensions of health (WHO, 1981): physical health, the proper functioning of the body; psychic health, personal world view, basic behavioural principles, peace of mind; mental health, the ability of thinking clearly and consistently; emotional health, the ability to recognize and express properly emotions; social health, the ability of building relationships with others.

The above mentioned philosophical approach was followed by more pragmatic definitions. According to Mihályi (2003) “health is the correspondence between the individual’s actual biological functioning and the biological function available by age and sex and/or required by the society. Health assessment is based on the functionality (abilities and limitations), the existence and nature of pain, and the mental acceptance of all these factors by the individual.

Relations between health and housing conditions

Since the beginning of mankind, dwelling has played a role in the protection against natural forces, in relaxation and regeneration of human workforce, it must provide adequate conditions for washing, household work, studying, family and social life, and recreation. Dwelling, home, the immediate environment and the community together form the housing conditions. If functional and satisfactory physical, social and mental conditions are provided in terms of health, safety, hygiene, comfort and privacy, we can talk about healthy living conditions. (Rudnai et al., 2007)

According to the UN document of 1996 The Habitat Agenda: Chapter IV. B. “Adequate shelter means more than a roof over one's head. It also means adequate privacy; adequate space; physical accessibility; adequate security; security of tenure; structural stability and durability; adequate lighting, heating and ventilation; adequate basic infrastructure, such as water-supply, sanitation and waste-management facilities; suitable environmental quality and health-related factors; and adequate and accessible location with regard to work and basic facilities: all of which should be available at an affordable cost.” (UN-HABITAT, 1996)

Shaw (2004) differentiates the hard (building and physical infrastructure) and soft (e.g. social and perception dimensions of housing) factors in the model describing the interrelation between housing and health. Inadequate housing conditions can have a direct and indirect impact on physical and mental health. (Wilson et al. 1998; Sharfstein, Sandel, Kahn, & Bauchner, 2001; Thomson, Petticrew, & Morrison, 2001) Risks of infections, chronic illnesses, injuries, poor nutrition, risk of mental problems are higher. (Krieger-Higgins, 2002) They increase the danger of asthma, obesity, cardiovascular diseases (Pope, Burnett, & Thun, 2002) and the risk of anxiety, depression, attention disorder, drug use and aggressive behaviour (Raffestin & Lawrence, 1990, Fullilove & Fullilove, 2000).

Overview of EU policies targeting Roma, with special focus on health and housing

As it is stated in the 2010 communication of the European Commission, “(...) a significant part of the 10-12 million Roma in Europe live in extreme marginalisation in both rural and urban areas and in very poor socio-economic conditions. The discrimination, social exclusion and segregation which Roma face are mutually reinforcing. They face limited access to high quality education, difficulties in integration into the labour market, correspondingly low income levels, and poor health which in turn results in higher mortality rates and lower life expectancy compared with non-Roma. Roma exclusion entails not only significant human suffering but also significant direct costs for public budgets as well as indirect costs through

losses in productivity.” (EC, 2010 p. 2) Approximately, 6 million Roma people live in Central and Eastern European countries, of which the most exposed to the challenges of the above listed problems are: Bulgaria, Czechia, Hungary, Romania and Slovakia; these member states received country-specific recommendations for the national inclusion reforms as part of the European framework of national Roma integration strategies (EC, 2017).

Since 2011, the EU framework has been targeting the access of Roma to education, employment, healthcare and housing, and the fight against discrimination in these areas. Related to the issues discussed in this article, the 2017 ‘Midterm review of the EU framework for national Roma integration strategies’ evaluated the achievements in the above mentioned substantive policy areas. Related to the issues discussed in this paper, in terms of health, provision and use of health coverage and health services, the mental and different problems, teenage pregnancies and the lack of Roma health professionals remained challenges without significant improvement in the countries most concerned, while the health awareness, prevention, health literacy, health mediation, civil participation and cross-sectoral cooperation were the areas that can be characterized by positive changes. In the field of housing, progress has been reported regarding the housing programmes, surveillance of housing situation and new action plans and strategies on housing, but, the limited availability and low quality of social housing, discrimination in the housing market, as well as segregation and ghettoization have been mentioned as deficiencies (EC, 2017)

Situation of Roma population in Hungary

Hungary is one of the countries most concerned by the poverty and exclusion of Roma people. The investigation on the changes of the spatial distribution of the Hungarian population by Péntzes, Tátrai, and Pásztor (2017) has been based on the population census datasets of 1990 and 2011 that relies on self-declaration, and other two surveys (the CIKOBÍ survey from 1984-87 and the survey of the University of Debrecen from 2010-13), the latter representing external ethnic assessment. In the latest (2011) census 316,000 persons declared themselves as Roma and according to the recent survey approximately 876,000 Roma people lived in Hungary in 2010-2013, which is a growth of 174% compared to the estimated Roma population of 320,000 in 1971. According to the different estimations, there are the most Roma inhabitants in Northern Hungary and Northern Great Plain (24-30 and 24-26 per cent of the total Roma population), the least in Central Transdanubia (5-6%) (Péntzes, Tátrai, & Pásztor, 2017).

Based on the different databases, the proportion of Roma population living in villages is around 38-50%, especially in the settlements with less population than 2,000 people. This concentration in small rural settlements is linked to territorial disadvantages (Nemes-Nagy-Németh, 2005), although this sort of Roma population is dynamically decreasing (Pénzes Pásztor, & Tátrai 2015), while a slight growth of Roma population is observable in the villages of the agglomeration of Budapest and the suburban areas of the county centres (Bajmócy, 2014). The increasing Roma population in the capital and the cities with county rights can be attributed to the intensifying internal migration (Szilágyi & Péntzes, 2016).

According to the 2011 population census data, 33% of the Roma population is 14 or younger, the proportion of 15-49 years old Roma people is 43%, while 20% of them is between 40-59%. The old age group (60 years or older) is under represented with a share of only 4.6%, which is only one-fifth of the total population's value (24%) for the same age group. Overall, more than three-fourth of the Roma population is younger than 40 years of age (at the same time, in case of the entire population this is only 49%). 58 per cent of the Roma people above 15 years has the educational attainment level of primary school (8 grades) only, 23% of them did not finished 8 grades, so 79% of the Roma population has no more than primary education, while only 13% has secondary education without graduation, and only 5% graduated in high school. The presence of university diploma is marginal, only 1% of the Roma population has degree. Overall educational situation of the Roma women is worse than men's (Bernát, 2014 based on HCSO, 2011).

In 2013, 27% of the active Roma population was employed (which is very low compared to 60% share of the non-Roma population), and, 25% of them were long-term unemployed, that is five times bigger share than the proportion of 5% in case of non-Roma active people. Among Roma women aged 15-64, the unemployment rate was 61% in 2011, 17 percentage points higher than men's value (44%) (Ivanov & Kagin, 2014).

It can be considered as a general rule that the worse is the situation of a social strata, the more Roma are among them. More than 50 percent of the households in the lowest income decile are Roma, but deep poverty does not only affect Roma population. In Hungary, more than one million households are considered cumulatively poor. Every fourth household cannot satisfy either its most basic needs on a regular basis (Messing & Molnár, 2010).

There are roughly a hundred settlements in the country that have become a permanently poor Roma ghetto, and another two hundred which is currently in an inexorable way toward that state (Havas, 2008). The inhabitants of the settlements are mostly but not exclusively Roma. There are more than 1600 slums in more than 800 settlements, of which 60% are

located in villages. It is estimated that 16 of one hundred Roma live in Roma settlements where not only the gas supply or bathroom is missing, but often drainage, water and electricity, and which are impossible to approach by the ambulance, and danger of epidemics is constant (Cserti Csapó & Orsós, 2015).

Based on the 2013 household-level large sample survey of the National Institute for Family, Youth and Population Policy, it can be seen that, compared to the 2003 Roma survey, generally the Roma people live in bigger dwellings and with smaller number of dwellers, which increased the average space per one person. The larger the proportion of Roma in the population of a settlement is, the larger the homes of the local Roma households are. Comfort level of the Roma flats and houses also increased, especially the share of dwellings with flush toilet. The reason of the improvement of living conditions is that dwellings which remain vacant after the aging and dying residents, provide an attractive moving alternative for Roma families. In the neighbourhoods where Roma families appear, the real estate prices fall, and the cheap dwellings continue to be inhabited by other Roma families.

Although the housing conditions of the Roma population have improved remarkably in the last decade, the indicators lag behind in both quantitative and qualitative terms compared to the Hungarian national average (NCSSZI, 2013).

Effects of disadvantaged situation on health status in relation to the Roma population

Disadvantage can be characterized by the separate or combined existence of unfavourable economic factors. Usually it involves low income (partly or wholly consisting of social benefits) as well as poor housing conditions, small dwellings with a lot of residents, low per person area, unhealthy housing conditions (wet, slate walls, basement apartments, emergency housing, patio) poor amenities (lack of bathroom, kitchen, toilet, household utensils) (Andorka, 2003). The environment, the social situation, the lifestyle affects the quality of life through the health status. More frequent illnesses, disability represent a burden for the healthcare systems, and premature deaths are typical (Forrai, 2008).

The Roma population is the social group of Hungary living in the worst socio-economic and health circumstances. Among them the average age is lower, illness is more common, mortality is more premature than in majority society. (Merker, 2012) Life expectancy at birth can be 10 years below the population's average. (Prónai, 2000; Hüse & Péntzes, 2015) Housing and living conditions are mostly unfavourable: often lacking adequate sanitation, running water, electricity, and waste disposal. In Roma settlements there is a higher risk of spreading infectious diseases, such as tuberculosis, hepatitis A virus, scabbiness, pediculosis

and other skin diseases. Many Roma people live in one-roomed flats, although they are equipped with electricity, they frequently lack water pipe and flush toilet. In most parts of the settlements there is no drainage, freshwater supply and refuse collection. They often use public spaces instead of running water for washing and cleaning. Outhouses used instead of toilet can easily become the source of infections and epidemics, to which especially children are exposed. (Csépe, 2010)

The low educational attainment level among the Roma population is associated with low employment and income levels, which has a bad impact on health status and health behaviour (Kemény & Janky, 2003). Most often, they turn to a doctor rarely and late (Gyukits, 2000): 64.2% of the Roma population rarely or never go to a general practitioner, 63% rarely or never visit outpatient clinics, and inpatient care is never visited by 39.3% of them. Only one-sixth of them participates in dental screening and only one third is involved in cervical and lung screening. Among Roma people, there is a high incidence of depression, cardiovascular disease, diabetes and cancer mortality, and all of their risk factors are higher. More than three quarters of the Roma population are smokers, more than one third of them are overweight (Köbli, 2011). The prejudicial, discriminatory attitude they frequently experience on behalf of healthcare workers, does not help their situation either (Puporka & Zádori, 1999).

According to Belak, Geckova, van Dijk, J. P. & and Reijneveld (2017), regarding Roma people, the higher alcohol consumption, the greater promiscuity, the more adverse peer pressure and the dysfunctional social support belong to the category of myths about which there are no evidence obtained.

Experiences of national and local housing programs

Molnár, Ádány, Ádám, Gulis, and Kósa (2010) found that the health consequences of international and local-level housing initiatives in most cases fail to be assessed prospectively or evaluated after implementation. This is the reason they carried out a retrospective health impact assessment (HIA) of a Roma housing project in a Hungarian settlement called Hencida, in comparison with the outcome evaluation of the same project. In the framework of the project, 12 Roma families moved to new dwellings, and 46 houses were renovated from the outside, along with the restoration of the built and natural environment of the settlement. As a result of the research based on interviews with project-stakeholders, positive impacts on education, in- and outdoor conditions were noted, but negative impacts on social networks, housing expenses and maintenance, neighbourhood satisfaction and no sustained change in health status or employment were identified. As a basis of regional or national level housing programmes, the authors recommended small scale pilot projects with the careful selection

and continuous involvement of the beneficiaries, kept under control by group of professionals. The projects' impact on health prevails through the socio-economic determinants of health, and not directly by the housing improvements.

Regarding the interrelations of health and housing conditions in countries most concerned by the Roma problem, Molnár et al. (2012) analysed the national policy programmes of Bulgaria, Hungary, Lithuania and Slovakia, by the method of health impact assessment. Generally, it can be stated that the market-based housing is hardly accessible for Roma people due to lack of financial resources, and so is social housing with adequate living conditions. According to their findings, the 'top-down' approach of the central governments, the missing knowledge of local conditions and decisions subordinate to politics worsen the implementation of nationwide programmes. Instead of this, the principle of subsidiarity is recommended to be applied for Roma housing projects, the closest to the localities and the direct stakeholders, and HIA should be carried out for particular actions than strategic policies, prospectively and retrospectively too.

OBJECTIVES AND METHODS

“For research into the social root causes behind any particular health-inequality, qualitative case-studies focusing on the worse-off population's health-endangering everyday settings and practices represent a good starting point.” (Belak et al., 2017. p. 2)

Through the case of the Hungarian village of Bag and the Roma settlement located there, I would like to highlight the connection between housing conditions and health. After reviewing literature about the interrelations of Roma population's situation in Europe and Hungary, the disadvantaged social status, and the housing conditions and health, I will carry out a demographic and socio-economic analysis on the village of Bag, followed by the examination of data on local housing conditions. Focusing on the Roma settlement of the village, I will recall findings of former field researches, characterizing the infrastructural and social environment which can be found there.

The field research that provided the empirical results of the study, was conducted in June 2017, in the framework of the so-called Village Seminar of Szent István University, which is one week stay at the researched location. Several topics are deeply investigated by the participants, e.g. history, demography, spatial relations, physical infrastructure, local governance, community life, civil activity, health, social care etc. Main methodologies of the field research are questionnaire surveys, interviews, observations and document analyses, in addition to the literature review and the collection, systematization and analysis of secondary

statistical data. The Village Seminar program aims to carry out a monitoring research for the systematic, recurring examination of villages that make a rural phenomenon (Molnár, 2009).

Bag was visited for the first time in 2009: in choosing this settlement as a sample, it was important to examine that, in a former agricultural, railway and industrial village near the agglomeration of Budapest, showing quite early citizenry, how the community experienced changes. Among others, the 2009 field research had a romological direction to explore the Roma living in the settlement and the certain aspects of coexistence with the majority society. The 2017 research aimed to examine the several open-ended questions regarding Roma-Hungarian coexistence, reflecting on the changes compared to 2009.

Regarding the Roma settlement's issues in Bag, I will review the findings of the authors participating in the 11th village seminar, acquired in the framework of questionnaire surveys and interviews made in summer of 2017.

I will introduce the results of my own interviews with the actors of the local healthcare system, i.e. the general practitioner, the dentist and the district nurse, with the aim of giving a detailed presentation of the effects of living conditions on the health status of the residents of the Roma settlement. The interviews were done personally in June 2017, at the workplace of the respondents, in 45-60 minutes conversations. Results of the questionnaire survey, involving 157 Bag households, based on proportional sampling, were not used in this study, because most of the answers from the Roma settlement can not be interpreted due to the lack of clear understanding by the respondents.

RESULTS

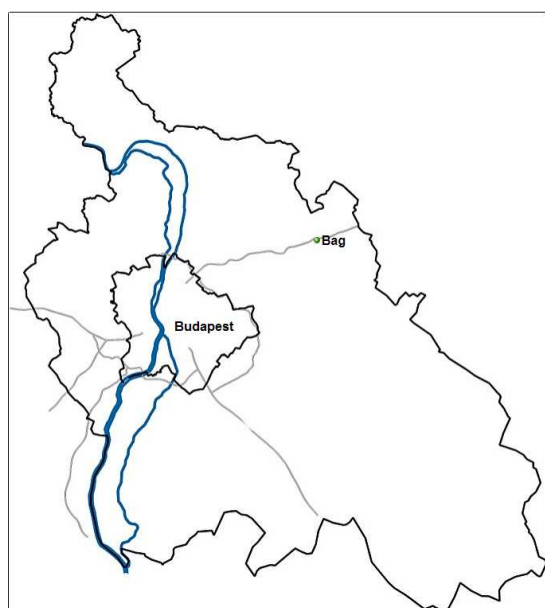
Geographical location, demographic situation of Bag

The village of Bag is located in Central Hungary NUTS 2 region, in Pest (NUTS 3) county, in Aszód (LAU 1) district, 40 km from Budapest. By public road it can be approached from the M3 highway or from the main road no. 3, or by bus and by train. The image of the village was transformed by the large regional investments of the past (railroad, main road Nr. 3, M3 highway), but a significant part of the settlement was able to preserve its characteristic image. Although the village can not be classified as a settlement in the agglomeration of the capital, its transport connections make it possible to profit from the proximity of Budapest and the city of Gödöllő (Nagy, 2017).

Bag's territory is 23.55 km² and the population on 1 January 2017 was 3669. The population dropped by 9.65% between 2010 and 2014 (of which 5.44% happened from 2010 to 2011), followed by 2.37% increase between 2014 and 2016. Since 2007, the migration

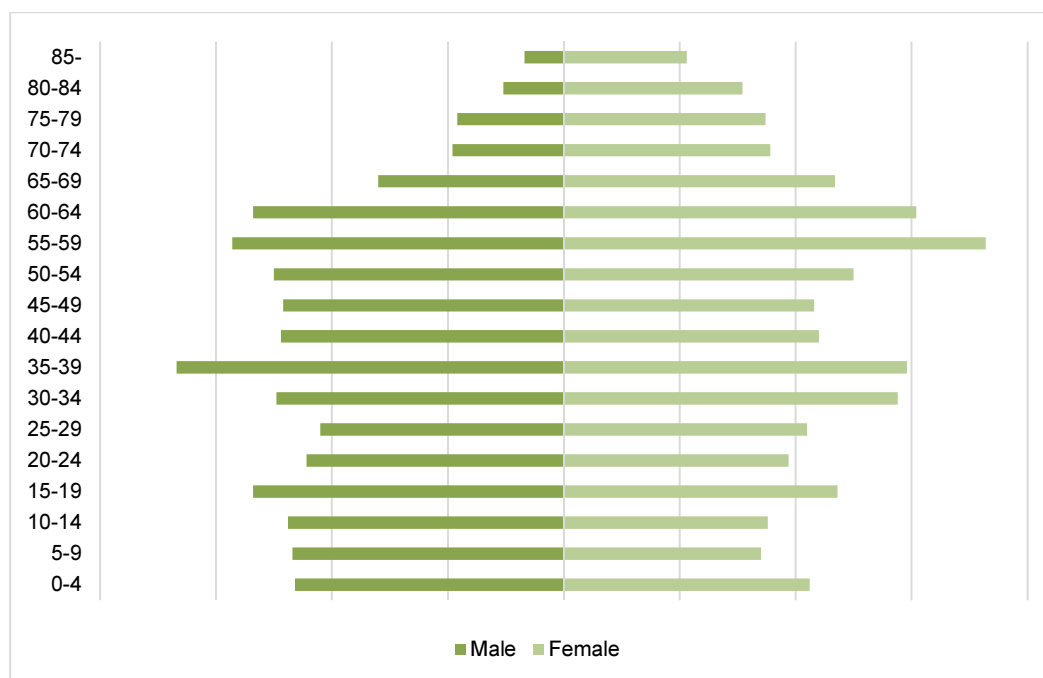
balance was positive for the first time in 2015 (6.95), the average value of the 2005-2015 period was -4.87. The lowest value, -19.06 was registered in 2011, but emigration was high in 2012-13 as well. The regrowth after 2013 can be attributed to the cheap real estate prices and the proximity of Budapest (Lőrinc, 2017). According to the latest population census (held in 2011), 88.43% Hungarian, 5.07% Roma and 1% Romanian, German, Slovakian and other (or not declared) nationalities lived in Bag. The share of self-declared Roma ethnicity is three-times higher than in Pest county (Lőrinc, 2017).

Figure 1 The position of Bag in Pest County



Source: https://upload.wikimedia.org/wikipedia/commons/e/e8/Pest_location_map.jpg

In terms of age structure, the village is considered to be ageing: in 2016, the proportion of population aged 0-14 was 15.92%, the population aged 15-64 was 65.3%, and the population aged 65 and over was 18.77% (age pyramid can be seen on Fig. 2), the ageing index (i.e. the ratio of the age group of 60+ and 0-14) was 1.54 (constantly increasing). Natural increase (i.e. the number of live births and deaths per thousand inhabitants) was -2.9 in the average for 2011-2016 (lower than the country average). According to the available 2011, 2013 and 2016 data, the number of infant deaths appears to be low in absolute value (always 1), but it was very high per 1000 live births, 20.41 in 2016, (though it is decreasing due to the growing number of births, the value was 29.41 in 2011 and 23.26 in 2013): this is above the national-level. The proportion of children with multiple disadvantages in the population aged 0-14 was 26.2% in 2016, which is very high compared to the country rate of 8.47%. This rate suggests that the majority of children in Bag are born into disadvantaged Roma families.

Figure 2 Age pyramid of the village of Bag (2011)

Source: own editing based on population census data of Hungarian Central Statistical Office, 2018

Economic and employment situation of Bag

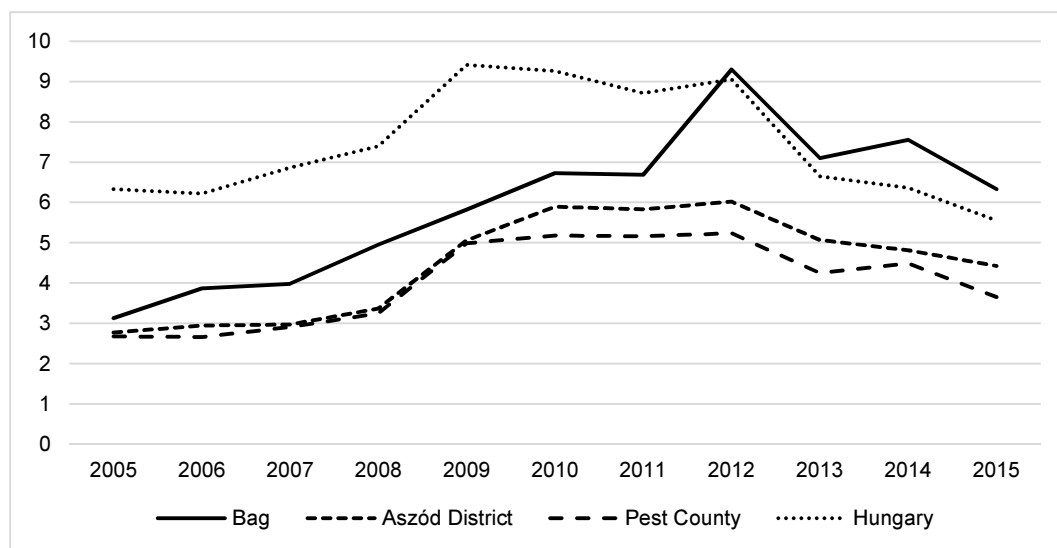
The deliberate development of the local economy is indicated by the fact that the number of registered businesses in Bag grows year by year (89 in 2004 and 153 in 2014), so the trend is favourable, although the processes are not helped by the fact that the development of the 45 hectares farm logistics centre called Central Business Park is not exactly in line with expectations.

In the village, the proportion of taxpayers (i.e. the share of those who have income as base of PIT by 100 permanent residents) starts to approach the pre-2009 level after the decline caused by the crisis (40.09% in 2014). Total net income per capita (as basis of PIT) grew steadily before the crisis, followed by a decline and stagnation. After the year 2012, however, the value of the indicator jumped to above the level of 2008: in 2014 it was HUF 667 494 (Figure 2)- In line with the general trends, a widening income inequality in Bag is indicated by the increase in the number of tax payers with an income over HUF 5 million projected to 100 tax payers with an income under HUF 1 million, it increased from 4% in 2005 to 23.5% in 2015.

The unemployment rate had steadily increased between 2005 and 2012 in Bag, since then it has declined, but has not reached yet the pre-2010 level (Fig. 3). The proportion of long-term (over 180 days) unemployment within the unemployed persons was 48.36% in the above mentioned period, and showed fluctuations over the years. In case of Roma, the economic

inactivity and unemployment is strongly linked to the low educational attainment level (Lórinç, 2017).

Figure 3 Unemployment rate (%), 2005-2015



Source: own editing based on Hungarian Central Statistical Office, 2018

In the light of recent population census data, most of the employees were employed in industry and construction (28.93%), 24.98% as other intellectual professions, 16.73% in commerce and service, 16.44% as executives or intellectuals, and only 2.85% in agriculture and forestry (10.08% in some other jobs). The employment structure therefore corresponds to trends observed at higher territorial levels. Due to the characteristics of the village and the proximity of Budapest and its agglomeration, the proportion of persons employed in other settlements is 73.41% (according to the 2011 census data), so most of the employees commute from Bag.

According to 2011 census data, for 100 employed males there were 59.3 inactive men, while for women the same indicator's value was 129.19. Among the inactive earners, the proportion of pensioners and annuities is 90.68% for men and 80.86% for women. Of the 15-59-year-old population, there were 24.2 dependent men and 21.06 dependent women for 100 persons. 61.73% of dependent men, 56.64% of dependent women study in full-time education, in which case the social benefit of the dependency status prevails through the increase of qualifications.

Housing conditions in Bag

In the village of Bag, the dwelling stock grew steadily until 2012, since it has been near stagnation (1340 flats). In terms of dwelling stock per 1000 inhabitants, the highest value was registered in 2014 with 373.61 dwellings. At the time of the 2011 census, 94.73% of the

dwelling were occupied and 99.25% of the dwellings were owned by private individuals. More than a quarter of the dwellings were built before 1960, almost a quarter (24.7%) between 1961-1970, 21.57% between 1971-1980, and 13.66% between 1981-1990. Only 14.25% of the current dwelling stock was built after the change of regime.

The construction of the public water conduit network in Bag started in 1974 (Fercsik, 2002), and the proportion of dwellings connected to it has been around 96% for a long time (which is higher than the national average). The construction of the gas pipeline was completed by 1995 (Fercsik, 2002), today more than 80% of household heats with gas. 64.4% of the dwellings in Bag had central heating at the time of the 2011 census. In 2001, Bag with four other settlements started to develop a sewage collection network (Fercsik, 2002). In 2004, 74% of households had sewage conduit, today 89% of households have sewerage settled. In 2011, the proportion of homes with flush toilet was 94.21%.

The collection of communal waste is organized in Bag since 1975 (Fercsik, 2002), the latest data on the ratio of dwellings involved in regular waste collection is available from 2012: 86.4%. Although the reliability of the data is questionable, the information extracted from the data shows that the issue of selective waste collection is somewhat neglected in Bag: in 2012, for 1000 dwellings involved in regular waste collection, 15.48 tons of selective waste were disposed, while at country level this quantity was 26.43 tons. Taking into account that in the average of the 2006-2016 period the amount of household waste collected per inhabitant (67.25 t) in Bag was not much higher than the national value, the 'poor' situation of selective waste management in the settlement cannot be explained by the fact that less waste was produced.

Based on the classification of Act. LXXVIII of 1993 on Certain Rules of the Lease and Alienation of Residential and Non- Residential Premises ("Housing Act"), according to the latest census data, in Bag 63.61% of the dwellings have all amenities, 28.95% have principal amenities, 2.56% have part of amenities, 4.51% are without comforts, 0.38% are emergency dwellings. Regarding the proportion of dwellings with all amenities, the settlement exceeds the 59.38% national level. The situation is similar in the case of dwellings without comforts: the 4.51% value of Bag is more favourable than the national level data (5.76%).

In addition to the level of comfort, quality of life is influenced by the size of the dwelling as well. According to the census data, Bag is also in a very favourable situation concerning the distribution of the dwellings according to the number of rooms and the floor area. The proportion of one-room dwellings in the settlement was only 2.18% in 2011 (10.39% at country level), and 78.5% of the dwelling stock had 3 or more rooms in the year of the census (compared to the country level data of 51.45%). The proportion of dwellings over 80 square

meters is higher in Bag, while in the lower size categories the proportions are lower in the village (and decrease by lowering categories) in comparison with the national averages.

‘Telep’ – The Roma settlement in Bag

The Gypsy settlement is a famous, rather notorious part of the village of Bag. Some „oláh” and „musician” Gypsy families lived in the center of the village already around 1920, their memory is preserved by the place called „Cigánygödör” (Gypsy Pit). In 1959-60, the Municipal Council relocated the Gypsy families living there to the edge of the village (to the streets named Ősz and Tél utca). From the 1960s onwards, Gypsies were resettled to Bag from all over the country, including the neighbouring Hévízgyörk, following the slum elimination decree issued by the Hungarian Socialist Workers’ Party (MSZMP) in 1961, but many of the Gypsies moved voluntarily. The border of the settlement was shrinking more and more in the direction of Nyár, Dankó, Liget and Szentlászlói streets. The elimination of the Roma settlement was not successful in Bag, and houses built with the help of „szocpol” (housing support for families with children) modernized the Roma settlement’s environment, contrasting with the run-down adobe huts.

By definition, the so-called ‘Telep’, Roma settlement, is a separate place composed of at least four settlement parts that do not meet social requirements. It is characteristic that regarding its technical state and physical appearance, it lags behind the norms prevailing in the community (in our case, among the Hungarians) (Berey, 1991). Because of the segregation of the Roma groups living there, the settlement is divided into the lower part, the (less developed) upper part and the separate Tavas street. In the less developed upper parts (Ősz, Tél, Dankó streets) smaller adobe houses, missing public utilities and the lack of gardens can be observed (Morvay, 2009).

In her questionnaire survey, aiming Bag’s so-called street image analysis, Tóth (2017) concluded from the 135 evaluable answers that the quality of the public road is the worst in the streets of the ‘Telep’. Not only the residents of the Roma settlement mentioned the bad road quality here, but the major of Bag also: long time ago there has been a plan for reconstruction, but all the tender applications were refused because of the lack of funds, and the municipality can not afford it on its own. The only public drinking fountains remained in the Roma settlement, but the question arises: who should be charged and how for the use of water? The Roma residents need the freshwater, taking into account that in most of their dwellings there are no any water source, and it is mandatory task for the local government to provide drinking water. In addition to the bad condition and low value of the real estates in the Roma settlement, the houses in the neighbouring streets are getting devalued on the

market, which can be considered as the main reason of the disadvantageous ‘population change’ and the expansion of the ‘Telep’ (Tóth, 2017).

The Roma settlement creates an environment for the children in which the disadvantage is encoded: their inclusion is a serious challenge for the local kindergarten and school, and it requires a high-level knowledge and professional skills from the educators. In the elementary school of Bag, half of the students are disadvantaged. The effects of substance use in the Roma settlement appear in the changed behaviour of the Roma students as well (Bogárdi, 2017).

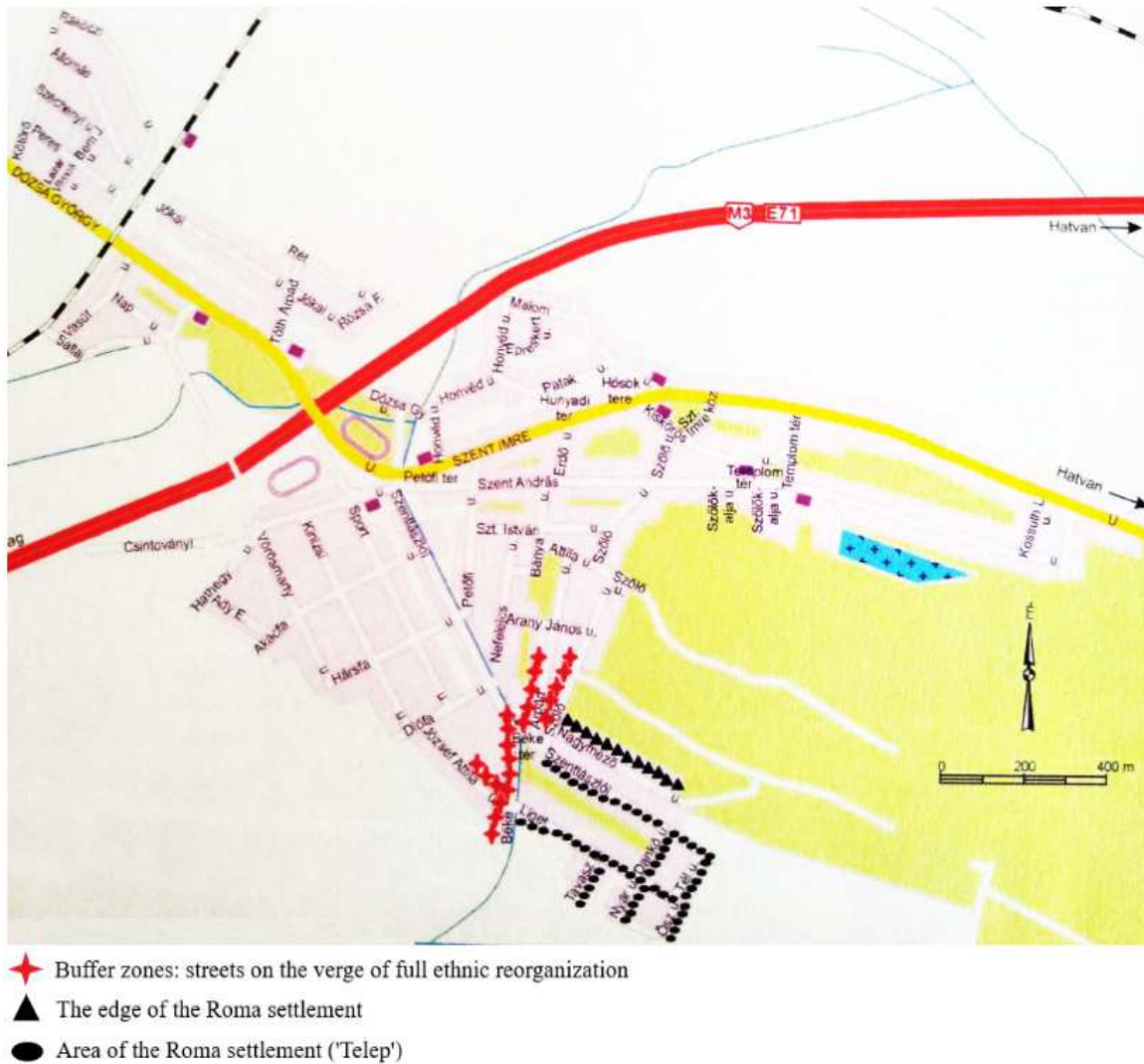
Molnár (2009) investigated in the framework of a questionnaire survey asking 101 households, aiming mental mapping, in which parts of the village they would like to live and where not. (Fig. 7) On the map, the most negatively perceived zone was overwhelmingly overlapping with the Roma settlement consisting of the streets of Tél, Tavaszi, Nyár, Ősz and Dankó, and the other streets in direct contact with these. The reasons for the unfavourable judgment of the area were partially the environmental and infrastructural conditions of the site (waste on the streets and in the houses, unsolved rainwater drainage, unpaved roads, etc.), and partly the conflicts with the Roma minority.

Most of the people living outside of the Roma settlement did not rely on their experiences, they were not able to differentiate between the streets within that neighbourhood, their opinion reflected the conflicts that complicated coexistence. Almost all of the people of the Roma settlement expressed a negative opinion of the streets inside the settlement falling outside of their place of residence. The community of the Roma settlement is not unified and does not see itself as being such (Molnár, 2009).

In the recent mental mapping of Molnár (2017), significant changes can be seen compared to 2009. Based on the 157 household-level questionnaires, Liget utca and Szentlászlói utca from the former neighbouring streets have become part of the Roma settlement: the ethnical transition has been completely implemented, and mostly associated with negative perceptions by the respondents. In Nagymező utca, where in 2009 the minor negative judgment originated from the ‘unfixed’ conflicting social interactions, now there is a ‘fixed’ physical coexistence emerging: approximately every second household is of Roma ethnicity. The reasons of negative opinion about the Roma settlement were e.g. deprivation, crime, untreated heaps of garbage, lack of proper sanitation, bad quality roads etc. A lot of respondents outside the Roma settlement have never been in this part of Bag, or had been a long time ago, and they did not distinguish between the different streets of the ‘Telep’. For the residents of the Roma settlement, the ‘Telep’ is not a homogeneous area: in their evaluation, Tél and Dankó utca,

with the messy, ramshackle houses far from the public drinking fountain are representing the parts where they do not want to live (Molnár, 2017). (Fig. 4)

Figure 4 Mental map of Bag



Source: Molnár M. (2017)

DISCUSSION

Assessment of Roma health in Bag by local healthcare staff

In my own field research (carried out in June of 2017) I strongly relied on the interviews made with the actors of Bag's local healthcare system. There are two general practitioners in the village of Bag. The doctor of district 1 is Dr. Gyöngyi Balatoni, Dr. Ibolya Cséke is responsible for district 2. The joint building of district 1 is shared by Dr. Melánia Szabó's dentist's office, where she operates school dentistry as well. Night and weekend attendance (where Dr. Gyöngyi Balatoni takes also charge) is available in the town of Tura. The nearest specialized health care institution is the outpatient polyclinic in Aszód town. In Bag, the

district nurse care is divided into two districts: in district 1 Andrásné Czerok, in district 2, Erzsébet Szemán serve as district nurse. Their office is in the vicinity of the general practitioner's surgery of district 2. The pharmacy is operated by dr. István Télessy.

Based on the data of the Hungarian Central Statistical Office, after the turn of the millennium, the number of cases in the general practitioner's surgery has increased steadily until 2012 and then returned to the 2010 level by 2015. The number of cases treated outside the surgery in the dwellings started in 2011 to deviate from a nearly stagnating state towards a slightly declining trend. Although, according to the HCSO, the population of the village declined by 9.81% from 2008, the drop in GP visits awaited until 2011, when, compared to the previous year, natural increase decreased by 2.6, and the migration balance got lower by 6.3, with a continuing tendency.

During the interview, the general practitioner of district 1 acknowledged that in Bag the Roma population is characterized by a youthful age structure, while the Hungarian population is ageing: the young families leave the village and children are taken out of the local school. According to the Doctor, the Roma population has only the sense of illness, health consciousness is solely characteristic for the people living outside the Roma settlement.

According to the district nurse of district 2, the majority of Bag's pregnant women are of Roma origin. Since they give birth early (from the age of 16) and it is not uncommon that they have three children at the age of 26, they become sort of "worn out" relatively young. Despite the existing differences, bad health and prolonged chronic illness are not specific neither among Roma nor among Hungarian women. In the Roma settlement, child neglect unfortunately appears, both in material sense and in the form of verbal abuse. After having given birth to several children, premature birth is frequent among Roma mothers. According to the district nurse's opinion, the women living in the settlement are mostly passive sufferers of the bad habits of men, but they themselves also smoke usually, up to 5-6 cigarettes a day (and many mothers occasionally or regularly consumed drug earlier in their life). Roma children often receive prepared food – not adequate for their age – at the age of 4-5 months, which does not reverse their development but increases the risk of allergies, diabetes and digestive problems.

There is very poor general hygiene at the Roma settlement, generally dwellings are without bathroom with toilet, there is no kitchen, stove, but what is even more surprising is that there is no public drinking fountain or outhouse. Roma families live in crowded conditions, the quality of life of the inhabitants of the settlement is spoilt in winter by the pediculosis being a public health problem, and, from spring to autumn, by upper respiratory illnesses. It is worth

mentioning, that, according to the district nurse, psychological disturbances, “tics” are less likely to occur among Roma children than among Hungarians, although at school they are usually ashamed of coming from the Roma settlement and the difference between the home and school environment causes considerable internal tensions for them.

It is interesting that according to the dentist, 30 years ago the condition of the local Gypsy children's teeth was better than the Hungarians', but nowadays, due to the consumption of soda with a lot of sugar and the almost total lack of dental care, this situation has reversed and drastically deteriorated. Roma patients often present at the dental practice the social insurance card of another Roma during the visits, so their identification is also a problem.

BAGázs: a civil initiative aiming Roma integration in Bag

In 2010, the BAGázs Public Benefit Association was established by the founder president Emőke Both, together with her friends as volunteers. The organization's aim is to implement the peaceful coexistence of the Roma and Hungarian population, by assisting the Roma to formulate goals and to do something for themselves, providing tools and knowledge to make progress. Specific objectives are the decrease of drug use and crime, dialogue-based conflict management, promoting volunteering and alternative education methods, and through it, to enhance social sensitivity. Particular activities are carried out in the framework of six programs, targeting the competence development of Roma children, adult education, debt management, legal assistance and counseling, promotion of employment, political advocacy and community building by the help of sport. The programs are financed to the extent of 75% by private investors and 25% by tenders. The main drawback of mission accomplishment is the lack of public awareness about the activity of the association among the residents of Bag, and, the lack of trust due to the late contact with the municipality government, as well as the educational and social institutions (Mezei, 2017).

CONCLUSIONS

Physical and mental health is the most important factor in the quality of life, and its interrelation with economic performance is obvious: a healthy person is more willing to learn, more creative, more entrepreneurial, can work more and better and create this way the financial and cognitive basis for maintaining and developing health. Health is heavily influenced by housing conditions. Unfavourable socio-economic situation leads to deteriorated housing conditions, which lead to a deterioration in health, further reducing economic performance and the chances of creating a more favourable standard of living.

Millions of Roma are concerned by the disadvantage and substandard living conditions in Europe, especially in the Central and Eastern European countries. The European Union targets the inclusion and integration of Roma by a common framework, which provides specific recommendations and financial resources to achieve the goals. The national strategic programs must be based on the experiences of local small-scale housing projects, based on the principle of subsidiarity.

In the village of Bag in Hungary, which is the subject of my analysis –based on questionnaire and personal interviews carried out in summer 2017-, the proximity of the motorway and the capital intensifies the ‘suctioning’ effect, low value is generated locally, and the income is not spent in the locality. The Roma settlement in Bag is a segregated part of the village: the Hungarian majority society, which is gradually acquiring an urban lifestyle, while commuting and slowly migrating elsewhere, is isolated from the problem and the society inside the Roma settlement is also divided. Among the Roma people in Bag, the destruction of their own health (e.g. drug consumption, smoking) is not uncommon, congestion, the low comfort level being below basic requirements, poor hygiene conditions are also unacceptable from the point of view of public health requirements. The early and frequent parenthood of the Roma population causes the ‘extended’ reproduction of the problem and the possibility of outbreak is extremely limited.

The risk of ghettoization is dependent on numerous economic and ecological factors. The Roma settlement’s spatial expansion is not a reason for ghettoization in itself, but the lack of clean water, sanitation, waste management and the missing basic elements of comfort jeopardizes the ‘Telep’ to become a fully segregated, more and more hopeless part of the village. For avoiding the further deterioration of the situation and to improve the Roma population’s health by influencing its socio-economic and environmental determinants, the coordinated work and cooperation of the local government, the social, healthcare and educational institutions, and the civilian sector is needed, by the continuous involvement of the beneficiaries.

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THE ROLE OF NATURAL RESOURCES IN THE ECOTOURISM DEVELOPMENT – RESIDENTS’ PERCEPTIONS IN SUBOTICA (NORTHERN SERBIA)

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Abstract

Regardless of their type and structure, natural resources represent the basis for industrial and economic development of every country. The aim of this study is to determine and display the natural potential in the territory of the City of Subotica (Vojvodina Province in Northern Serbia), on the basis of four protected natural areas. These areas are: Palić Nature Park, Ludaško jezero Special Nature Reserve, Selevenjske pustare Special Nature Reserve and Subotička peščara Protected Landscape of Exceptional Distinction. All listed areas represent the main aspects for ecotourism development in this part of the country, so one of the aims of the research is to identify key stakeholders that should be involved in proper developing of this form of tourism. When performing this study, survey research techniques were used. Respondents were Subotica’s residents, who were asked to rate the state of the environment in these surroundings, as well as to give their opinions about the possibilities for the development of ecotourism. Based on the analysis of the dependent and independent variables, it was concluded that the residents are generally satisfied with the conditions of the environment, they also consider that the development of this form of tourism would raise the awareness of locals about the importance of preserving these protected areas. The result may be significant when launching a new tourism product, while preserving the protected areas and adapting for future visitors’ needs.

Keywords: natural resources, industrial and economic development, protected areas, ecotourism, Subotica

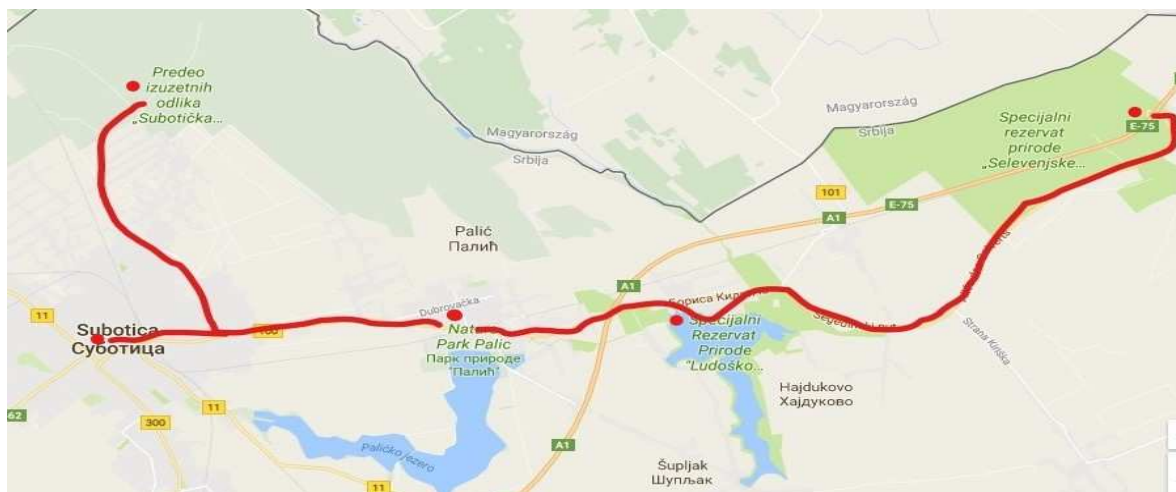
INTRODUCTION

The term “sustainability” has many meanings and contents and relying on the views of the authors who dealt recently with this topic (Bacsi, 2017; Jojić Glavonjić, Todorčić, Doljak, & Golubović, 2017; Vujko, Plavša, Petrović, Radovanović, & Gajić, 2017). We conclude that

for a particular community, sustainable is what enables lasting economic growth and development, what is socially acceptable, harmonizes the relationship and measure of economic and social development according to ecological capacities and is politically acceptable (it can be subject to agreement in official institutions). Tourism, looking through the prism of sustainability, is a concept based on undertaking activities that enable appropriate financial and economic arrangements, new technological and technical solutions, promotion and education, a new way of public communication and interaction, with an emphasis on openness, cooperation and transparency and new coalitions for sustainable development (Marković, Perić, Mijatov, Doljak, & Žolna, 2017; Petrović, Blešić, Vujko, & Gajić, 2017). Between several approaches to sustainable tourism (Bacsi, 2017; Petrović, Vujko, Gajić, Vuković, Radovanović, Jovanović & Vuković, 2018), there is some approaches that outline its relationship with ecotourism (Ocampo, Ebisa, Ombe & Esco, 2018), following the definition set by Blangy and Wood (1993; p. 32), according which the ecotourism is “responsible travel to natural areas that conserves the environment and sustains the well-being of local people”.

Often the existence of certain natural resources has a crucial impact on the development of the local community, giving it a certain identity, which continuously allows for a high-quality tourist interpretation of these natural resources that the observed area gravitates to, in this case, the City of Subotica. Modern trends emphasize the development of specific forms of tourism, and ecotourism is one of them. Urban areas having natural resources suitable for the development of ecotourism in their immediate surroundings represent potentials for development. The City of Subotica is the northernmost city in the Republic of Serbia and the second largest in the Vojvodina Province. According to the 2011 census, the City of Subotica has a population of 97.910 inhabitants while the urban area of Subotica (with adjacent urban settlement of Palić included) has 105.681 inhabitants. It is located 10 km from the Serbian border with Hungary and covers an area of 1,008 km², includes the territories of the Subotica town and 18 surrounding villages. The relief of Subotica and its surroundings was created predominantly by wind (aeolian erosion and accumulation), which created numerous dunes and interdune depressions mostly in the northwest-southeast direction (Kovačević, 2006). The city's surroundings have four protected natural areas that are specific for their numerous protected plant and animal species. Subotička peščara is located just along the border between Serbia and Hungary (Fig. 1).

Figure 1 Observed area



Source: Google map

In geomorphologic terms, this area is homogeneous and has a plain character. It extends to the section of the big plateau, which crosses from Hungary to our territory to the Kula-Sombor line. Moving further to the border, the "Selevenjske pustare" Special Nature Reserve is building on Subotička peščara. Selevenjske pustare is located between the town of Bački Vinogradi and Horgoš, and one part of it is part of the Municipality of Kanjiža. This protected area is characterized by the fact that for some species, it is the only habitat in our country or is one of the few existing sites (Maravić, 1997). The small town of Palić, as well as the Palić Nature Park, are 7 km from the center of Subotica. Palić is a very important tourist and recreational center of this area, while the Nature Park is an area of international importance for birds (IBA) and plants (IPA), and is part of the EMERALD network of areas of international importance for the conservation of biological diversity. In addition to this natural reserve, in the villages of Šupljak, Hajdukovo and Nosa, there is Ludaško jezero (Ludaš Lake), which is also located on the eastern European migration path of birds. Ludaško jezero is significant as one of the rare habitats for some of the rare and endangered birds, and it is also known as a place for many other endangered plant and animal species.

The subject of this paper is to present a resource basis for the development of ecotourism in protected natural areas, and to improve the tourism offer of the City of Subotica. The aim of the paper is to study protected areas and bring them closer to both tourists and the local population. The task is to popularize these protected areas, based on valorization and zoning, as well as with the survey carried out on a sample of 328 respondents, in order to enable their higher attendance, better understanding and use.

METHODOLOGY

For the purposes of this study, the field research was conducted, involving four protected natural areas of Subotica (Palić, Ludaško jezero, Selevenjske pustare and Subotička peščara), and assistance in gathering data was given by Robert Čordaš, PhD, an expert in the field of environment protection. In addition to interview for research purposes, a survey was conducted during 2017 (from March to September) among 400 respondents, residents of the City of Subotica, with the aim of gaining insight into their knowledge of protected areas as well as the views on the economic aspects of ecotourism. Total number of 328 respondents filled questionnaire correctly. In order to obtain better results, SWOT analysis of existing protected natural areas has been done, as well as valorization of the space by qualitative-quantitative method. This method represents one of the more widely used methods because it provides great freedom in research and estimates and is based on six indicators: accessibility of resources, tourist equipment, ambience, resource specificity, importance of resources and artistic value. Estimates i.e. set elements of tourist valorization, during the affirmation of resources, ranged 1-5 and marked the size of the contraction zone, in fact the significance of the destination itself. The meanings of numbers were as follows: 1 - number one denoted inadequate quality, 2 - quality that satisfies the local tourist significance, 3 - a good quality of resources with a regional significance, 4 - very good quality with a wider regional (national significance) and 5 - excellent quality of resources of international importance (Čomić, & Pjevač, 1997; Vujko, & Plavša, 2014). Valorization of natural sites is more complex than the valorization of anthropogenic tourist values because they differ in time and way of their origin, their elements, genesis, as well as that they can simultaneously satisfy more tourist needs (trips, sports, recreation, hunting, fishing, nautical, education, health needs). During the development of this work, zoning of protected natural areas was also made, on the basis of which it is possible to connect them for the purposes of realization of tourist tours. The connection of these protected areas is possible due to their immediate proximity, which, with the development of pedestrian and cycling routes as well as adequate signalization, will enable easier implementation of the tourists as well as the possibility for tourists to independently visit these areas. In this paper, a presentation of the traffic of tourists in the period from 2012 to 2016 was made. The data came from the database of the Republic Statistical Office from 2017.

RESULTS AND DISCUSSION

Subotica and its surroundings have natural and anthropogenic tourist potentials which can attract more visitors. Four protected natural areas are particularly emphasized, which are considered to have the power to attract a much larger number of tourists by arranging and investing in them. In order to gain a better insight into the state of the environment in the City of Subotica, SWOT analysis (Table 1) was made, which presents the internal advantages and disadvantages, as well as the chances and threats from the environment. The main advantage of Subotica as a tourist destination is the proximity to the border with Hungary, the proximity of the E 75 highway as well as good connectivity with all the roads and places in the surrounding area. What is the main topic of this work and what is needed in the future to pay even greater attention is well-preserved natural resources, plains, forests, sands, lakes, loess plateaus, as well as international protection statuses. It is also important to emphasize the preserved original material and immaterial heritage of local cultures as well as multiethnicity and tolerant mentality. Especially attractive for tourists in this area is precisely a mixture of different nationalities, cultures, traditions and gastronomy, which also needs to put special emphasis on further development of tourism. The main disadvantage of this area is poor infrastructure, which leads to the fact that tourists are not able to move independently from the city center. The second disadvantage is that there is no adequate destination management on the basis of which Subotica as a tourist destination would be more recognizable in the wider tourist market. The lack is also insufficient cooperation between the municipalities, tourist organizations, economic organizations and the local population. What is possible to present as important chances for further development of tourism is certainly the development and placement of new forms of tourism, specifically in this case ecotourism, as well as the involvement of the local community, which enables new jobs and a better standard of living. All these should be accompanied by adequate marketing activities in order to make new tourist products more visible to current and potential tourists. The main threats are the lack of financial support, as well as domestic and foreign investments in sustainable tourism, high unemployment and a growing trend of emigration of young and educated people. In addition, the main threat to the development of ecotourism is the devastation of the natural areas due to the development of the economy. The cause of the devastation of natural areas is precisely the insufficient education of the local population on the importance of protected areas.

Table 1 SWOT analysis of surrounding natural resources of the City of Subotica

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Favorable geographical position • Connectivity with the surrounding areas • Well-preserved diverse nature (plains, forests, sands, lakes, loess plateaus) • International protection statuses • The original and preserved material and immaterial heritage of the local population • Multiethnicity and tolerant mentality 	<ul style="list-style-type: none"> • Poor infrastructure • Insufficient visibility in the tourism market • Insufficient information • Insufficient cooperation between the municipalities, Tourist Organization and business entities • Lack of staff in new forms of tourism • Lack of adequate receptive capacities
OPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Resources for the development of ecotourism • Designing a new tourist offer • Incorporating a local community enabling new jobs and a better standard of living • Improving marketing activities • Organization of educational lectures, seminars, fairs 	<ul style="list-style-type: none"> • Lack of financial support • Devastation of natural areas due to the development of economy and tourism • Lack of domestic and foreign investments in sustainable tourism and ecotourism • Economic crisis • High level of unemployment and the trend of emigration of young and educated people

Source: Authors' research

One of the ways in which the mentioned area could be activated is certainly tourist valorization. Based on valorization, an estimate was made of the value of tourist attractions of this area through which tourists can meet their needs. Based on the valorization (Table 2) it is possible to notice that the Nature Park Palić was rated very high. The Special Nature Reserve "Ludaško jezero" stands out immediately after this protected area. This reserve has special significance for its specificity, due to the special and rare species of birds and plants, due to the existence of a visitor center and ornithological station. The next reservation, which is distinguished by its specificity, is the Special Nature Reserve "Selevenjske pustare". Although there is no tourist equipment in this area, it is certainly significant for the rare and endangered plant and bird species that are nesting here. Less accessible and equipped with respect to the rest is the Landscape of Exceptional Features "Subotička peščara", but it is significant for specific plant and animal world.

Table 2 Valorization of natural areas of the City of Subotica

Protected goods	Accessibility of the resource	Tourist equipment	Ambiance	Specificity of the resource	The importance of the resource	Artistic value
Nature Park Palić	4.5	4	5	4	4.5	5
Special Nature Reserve "Ludaško jezero"	4.5	4.5	3.5	5	5	-
Special Nature Reserve "Selevenjske pustare"	4	3	3.5	5	5	-
Landscape of Exceptional Features "Subotička peščara"	3	3	3	4	4	-

Source: Authors' research

During the development of this work, zoning of protected natural areas was also made, on the basis of which it is possible to connect them for the purposes of realization of tourist tours. The starting point of this visit is the Nature Park Palić, and except the park, there would be a possibility to visit the lake and other sights of the area. After that, a tour of the Special Nature Reserve "Ludaško jezero" would be carried out, which is about 7 km away from Palić. Educational walks, lectures on protected and rare species of birds, as well as observation of them, would be held here. Tourists would go further to the Special Nature Reserve "Selevenjske pustare", which is located 19 km from Ludaško jezero, where it is also possible to hold a short educational lecture and walk through the entire reservation along the marked paths. After that, along the border line with Hungary it is possible to reach the Landscape of exceptional features "Subotička peščara", which is 25 km away, where the skilled person would explain the origin of sands, the significance of afforestation.

Based on data from the Statistical Office of the Republic of Serbia in 2017 (Table 3) on tourist traffic in Subotica, it is possible to notice that 2016 was the year when the traffic of tourists was the highest in the observed period. Also, the number of foreign tourist overnight stays in Subotica in 2016 exceeded the number of overnight stays of domestic guests.

Table 3 Arrivals and overnights of domestic and foreign tourists in the City of Subotica (2012-2016)

Year	Arrivals			Nights		
	Domestic	Foreign	Total	Domestic	Foreign	Total
2012	24,076	13,855	37,931	38,078	29,787	67,865
2013	28,201	18,983	47,184	46,537	38,575	85,112
2014	34,884	21,842	56,726	52,534	42,081	94,615
2015	35,677	24,414	60,091	54,970	54,970	109,101
2016	37,845	24,977	62,822	59,112	55,011	114,123

Source: Statistical Office of the Republic of Serbia, 2017

The survey involved 328 respondents, of whom 172 were male respondents and 156 female respondents. By looking at the Table 4, it can be concluded that the residents of Subotica are very interested in spending their free time in nature as places for rest and relaxation.

Table 4 Opinion of the respondents about interest of residents of Subotica in ecotourism

			Opinion of the respondents about interest in natural resources in Subotica			Total
			Yes	I don't know		
Gender	<i>f</i>	%				
Male	172	52.4	Number	172	0	172
			%	52.4%	0%	52.4%
Female	156	47.6	Number	151	5	156
			%	46.0%	1.5%	47.6%
Total	328	100	47.6	323	5	328
			%	98.5%	1.5%	100%

Source: Authors' research

Table 5 Opinion of the respondents on the benefits of the development of ecotourism

Answers in relation to gender of respondents			Opinion of the respondents about benefits of investing in natural resources in the area		Total
			Yes	I don't know	
Gender	Male	Number	167	5	172
		%	50.9%	1.5%	52.4%
	Female	Number	148	8	156
		%	45.1%	2.4%	47.6%
Total		Number	315	13	328
		%	%	4.0%	100%

Source: Authors' research

The data from the Table 5 indicate a high level of awareness of the population that is beneficial to the city itself, if ecotourism in natural resources would develop. The Table 6 highlights which are, in the opinion of the population, the main benefits and advantages. First of all, it can be seen that as many as 91.5% of the population consider that the biggest

advantage of the development of ecotourism is the creation of new jobs, which directly points to the economic aspect of tourism development. Some scientists believe that "job creation" is one of the most important economic indicators that benefits tourism development (Gaddefors, 2005; Getz, & Carlsen, 2005; Vujko, Petrović, Dragosavac, & Gajić, 2016; Nagy, Káposzta, & Meta, 2017). Tourist traffic which can be seen in the Table 3 shows the existence of potential for development, as well as the importance of natural resources in terms of one of the main motivators that drive tourists to leave the place of permanent residence.

Table 6 Opinion of the respondents on the benefits of connection between natural resources and the city

Answers in relation to gender of respondents		Gender		Total	
		Male	Female		
Opinion of the respondents about benefits	New jobs	Number	162	138	300
		%	49.4%	42.1%	91.5%
	More investment in infrastructure	Number	0	7	7
		%	0%	2.1%	2.1%
	The young would stay in Subotica	Number	0	4	4
		%	0%	1.2%	1.2%
	The city would increase	Number	3	3	6
		%	0.9%	0.9%	1.8%
	The inhabitants would have more "health trails"	Number	2	3	5
		%	0.6%	0.9%	1.5%
	The inhabitants would have a place to swim	Number	2	1	3
		%	0.6%	0.3%	0.9%
	Something else	Number	3	0	3
		%	0.9%	0%	0.9%
Total		Number	Number	156	328
		%	%	47.6%	100%

Source: Authors' research

Ecotourism would contribute to the improvement of protected areas and ensure their better conservation and protection levels. The ultimate goal is to ensure the long-term competitive advantage of the destination on the tourism market.

CONCLUSION

Many economies of the world achieve significant market positions owing to the existence of natural resources. In recent years, with the rapid development of technology, a stressful and fast-moving lifestyle, there is an increasingly frequent trend of escapism in people, staying in nature and a healthy lifestyle. The City of Subotica, as a tourist destination, has so far been engaged in the development of many types of tourism (urban, event, cultural-historical, sports-recreational, wine tourism, etc.), while protected nature reserves have remained

neglected. It is precisely the greatest potential for further tourism development in this destination that lies in protected natural areas. Along with the planned development of ecotourism, these areas would be preserved from devastation and destruction, environmental improvement would be achieved, the local population would gain insight into their overall benefit, there would be links between different entrepreneurs, government and non-governmental organizations and the local community. In order to facilitate the efficient development of this type of tourism, it is necessary to include a team of experts in its implementation and in the formation of projects, as well as to give young people the opportunity to volunteer their contribution to their community. Based on the developed projects, there will be an opportunity to compete for the various funds offered by the European Union, as well as for attracting foreign investments and establishing cross-border cooperation with countries in the region.

From all these it can be concluded that the City of Subotica has great potential for development of ecotourism, which would increase the tourist offer on this destination. This is a type of individual tourism or small-scale tourism, as it is mostly about groups of up to 25 people. The advantage of this type of tourism is that there is no age restriction for eco-tourists. Ecotourism can be adapted for all ages and profiles (children, young people, adults and retirees, biologists, ecologists, scientists, etc.). What certainly contributes to the development of this form of tourism is that the local population sees the importance and benefits of this form of tourism. The greatest benefit of eco-tourism development is definitely new job creation. In this way, a responsible attitude of local communities towards protected areas in their environment would be achieved. Campsites that could be the backbone of tourism development should precisely be developed in these areas, and various types of workshops as well as nature schools for children will be organized in order to educate them on the importance of the environment and protected areas. Other activities of the camps would be sports and recreation, cycling, educational walks, bird watching. The mission of this form of tourism would primarily be the expansion of the business network and the establishment of cooperation with all relevant subjects of the economic and social life that are important to improve tourism in the City of Subotica and for planning the positioning in the market. It is necessary to enable the connection of key stakeholders who will work together on the formation and implementation of this tourist product. It is necessary to establish constant information and marketing support, publication of printed publications and the creation of a website. The most important is cooperation with the Tourist Organization of the city of

Subotica, which will actively present this form of tourism and direct interested tourists to engage in ecotourism activities.

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ASSESSMENT OF SERVICE QUALITY AND CONSUMER SATISFACTION IN A HUNGARIAN SPA

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Abstract

The present analysis was carried out at one of the most important medical tourism service providers, the Hévíz Spa and St. Andrew Hospital for Rheumatic Diseases. The institution provides spa services in two locations: in the medicinal lake of Hévíz and in the 7 pools of the pool spa. The present research carried out a single cross-sectional survey of the service quality and consumer satisfaction both in the lake and in the pool bath. Altogether 300 consumers were surveyed between 27 February and 31 March 2017. The questionnaire included the double list of questions of the SERVQUAL method, about performance and importance of various factors.

The customers of the two service locations significantly differ: while the customers of the medicinal lake are mainly guests paying for themselves, 70% of the customers in the pool bath are patients supported by the National Health Insurance Fund.

The results of the survey (with 4.64 as the average grade of quality on a 5 – point scale) reflects the high service quality of the spa. Although the difference between the guests and the patients in the evaluation of the importance of various quality factors was not proven, there is a tendency of different ranking of the importance factors and the service quality factors (i.e. reliability, assurance, empathy, responsiveness, tangibles). The graphical representation of the values and importance made it possible to identify the quality factors that require urgent improvement, in order to provide better service quality for both the patients and the guests.

Analysis of variance proved that the patients supported by the National Health Insurance Fund were more satisfied at both locations than guests paying for themselves. The high level of patient satisfaction is a very useful fact for the Hévíz Spa, because the level of satisfaction positively affects recommendations. This positive word of mouth promotion is highly valuable considering the fact, that the legislation in Hungary does not allow the promotion of health services.

Keywords: spa, service quality, SERVQUAL, customer satisfaction, Hévíz

INTRODUCTION

The world of intangible problem solving from a marketing viewpoint

Services are defined by Kotler (1992) as all activities or performances that one party can offer to another, that are not materialised, and do not result in an ownership right over anything. The provision of services may or may not be linked to a physical product. In other words, the service is a non-physical solution to a problem (Veres 2009). In contrast to a physical product, services are not only intangible, but are also characterised by the fact, that consumers

cannot own them after the purchase. They are usually performances or processes, which cannot be possessed (Kenesei & Kolos, 2007).

The problematic features of services are usually referred to as the HIPI principle: Heterogeneity, Intangibility, Perishability, Inseparability. The primary source of the problem is the intangibility of the offer of the service provider. In contrast to the material product services cannot be discovered by seeing, touching, tasting, smelling, or hearing (Kotler & Keller, 2012), therefore their quality is difficult to estimate. Services, therefore, will have to be purchased at least once, without any preliminary comparison (a “product sample”), in order to experience their quality. This fact explains the importance of word-of-mouth promotion for services (Veres, 2009). The variability of services is the result of the human factor. The higher importance of the human factor in a service increases the risk of variability (Karakasné Morvay, 2014). Perishability is a seemingly advantageous feature of services, as there is no cost of inventory, storage, transportation, but in real life this fact is a considerable disadvantage. In the case of material products the possibility of storing, as a puffer, can overcome the sudden changes of demand. As this is not possible for services, there will be peaks of demand, when some of the demand cannot be satisfied (i.e. customers will be lost), and at times of very low demand the capacities will remain unused (Veres, 2009). Inseparability means, that for most of the services the creation and the consumption happens simultaneously. The customer is also involved in the production process, and the person of the customer (as the input of the service, that cannot be standardised) influences the final quality of the service.

In the colourful world of services the range of health tourism services mean services that are provided with the involvement of both the person providing the service and the customer purchasing the service, and besides intangibility they include another considerable risk component. The frontline staff becomes a key component, functioning as the face of the service provider. Therefore, to achieve customer satisfaction, and the necessary high quality service provision, the selection, sustained motivation, and satisfaction of the service staff are also crucial (Kenesei & Kolos, 2007). The customer is also involved, thus becoming an influencing factor in performance. The stable quality of service provision does not only depend on staff performance. The “non-standardised input”, incorporated into the service creates considerable risk. It is particularly true for health services, that failed fulfilment of the service can lead to damage that is several grades higher than the value of the service transaction (Veres, 2009). In addition, for the confidential services of health tourism, marketing has to be used for informing the customer about the benefits of the service.

The service staff must precisely and professionally know the services provided. Useful marketing tools are the information boards placed at the entrance or in the lobby of the spa about the contents of the medicinal water or the diseases for which the water is beneficial, indications and counter-indications, or, as in the Hévíz Spa, the exhibition describing the history of the spa. The mouth-of-word promotion of the intangible services helps the opinion seekers, who do not have any information about the services, and to minimise risks and making the best decisions, will have to rely on others for recommendations (Murray, 1991). Therefore the very satisfied customers will not only become returning customers, but will provide positive word-of-mouth promotion improving the image of the service provider.

Value, quality, satisfaction

Utility, or value are called by Kotler and Keller (2012) the “triad of consumer value” determined by quality, service durability, and price, including a mix of tangible and intangible factors. Better quality and improved service provision increases value, while rising prices will decrease consumer utility. The perceived consumer utility is the difference of total consumer utility and total consumer cost, where total consumer utility is the economic, functional and psychological value of the product, service provision, staff and image, while total consumer cost is the money and non-money expenditures that the consumer spent on accessing the product (the sum of the time, the effort and energy, the psychological and financial costs spent on accessing and using the product (Kotler & Keller, 2012; Rekettye, 2008, 2004). For this Rekettye (1997) uses the formula:

$$\textit{Perceived value} = \textit{perceived utility of the product} / \textit{perceived consumer costs}$$

A high quality service means competitive advantage for a company, if, as a result, it can attract and retain customers. Quality, however, has to be seen from the customer’s viewpoint (Doležalová et al., 2017). Service quality is defined by Kenesei & Kolos (2007) as “the difference between the customer’s expectations and experiences; the more the experiences overcome the expectations, the higher is the quality perceived”. Service quality can be understood as the utility reflected by the consumer value judgement, “.... suitability for use” (Tomcsányi, 1994). In his book entitled the basic book of service quality Veres (2009) underlines, that the concept of quality can be generalised only with limitations, as it is influenced by subjective factors, and not all of its parameters are measurable, some of these are only measurable by estimations, and the general judgement about the quality of a service may differ from evaluation of the quality of a particular occasion. Besides the technical

quality of a service, at least as important – or even more important, unique – feature is the functional quality, i.e., the way of providing the service, e.g. the kindness and friendliness shown by staff, the speed and ease of the service provision process (Kenesei & Kolos, 2007).

The customers' preliminary expectations have a high weight in assessing the quality of the service provided. Expectations (expected quality, expected service) are formed by the customers' earlier experiences, the recommendations and suggestions by friends, word-of-mouth promotion, but informal sources and the promises by competitors and the marketing communication by the service provider are also important (Webster, 1991; Kotler & Keller, 2012). An example for the disadvantageous impact of the latter may be a commercial that promises unrealistic benefits, exaggerating the favourable features of the service, thus creating unreasonably high consumer expectations, that the service provider is unable to satisfy even if the service is of good quality. A contrary process is a situation when the consumer shows tolerance towards a *vis maior* situation that the service provider cannot avoid, and expanding the tolerance zone accepts a less than perfect service as satisfactory – e.g. as in the case of a natural catastrophe (Kenesei & Kolos, 2007).

Satisfaction reflects the comparative judgements of the person about the perceived performance of the product based on the person's own experiences (Kotler & Keller, 2012). In other words, it is the extent to which the product matches the consumer expectations. When the performance matches expectations, the consumer is satisfied. When expectations are not met, the consumer is disappointed. When, however, the performance is above the expectations, the consumer becomes overly satisfied, or in other words, happy. Satisfaction, in general, is, therefore, the happiness or disappointment generated by the difference between the expected and the experienced service. Kenesei and Kolos (2007) state that in order to retain comparative advantage, it is not enough to achieve customer satisfaction, the customer should experience bliss: It is not enough to provide services perfectly, but by providing service performance highly above customer expectations the emotional level of bliss should be achieved.

Methods for measuring quality and satisfaction for services

As high quality and the satisfied customer are crucial factors in retaining the competitive advantage of a company, customer satisfaction has to be systematically measured (Ko & Pastore, 2005). Satisfaction is a reflection of the customer orientation of the company, and helps to reveal the strengths and weaknesses of the service, to improve quality. The more

competitive is a sector, the more important is quality and satisfaction research in marketing (Zeithaml & Bitner, 1996). This is true even if the way of satisfaction evaluation is less exact in the service sector, than in material production.

Information can be collected by objective and subjective methods. Objective methods include measurable parameters, e. Sales revenue, market share, migration, consumer retain rate, returning customer rate. Subjective explicit methods require the questioning of the customer, implicit methods require the questioning of staff, and mystery shopping (Filiatrault, Harvey, & Chebat, 1996).

Another method, the Critical Incident Technique (CIT) is an interactive method in relation to a specific event, which, although rather unreliable, can be very helpful in identifying mistakes and deficiencies (Friman 2004). Larger service providers also use the technique of mystery shopping (mystery guest). In this technique a well-trained observer, disguised as a customer, tests the service process, focusing on the expectations of normal customers. Another quality assessment method, suitable for discovering service deficiencies, is the *Fishbone diagram* and *Blueprinting* (Brown, Gummesson, Edvardsson, & Gustavsson, 1991). The Fishbone diagram is a graphical presentation tool for the possible causes of quality deficiencies. Nowadays companies become increasingly to complaint – friendly, who offer easy ways for customers to make complaints, because they have understood that fast and efficient handling of customer complaints is an excellent tool for repairing deficiencies and stopping negative word-of-mouth statements, which would undermine the effects of promotion.

The systematic discovery of complaint situations lead to eliminating the occurrence of complaints, which is particularly important for health services in health tourism, because health-related services are confidential, and the risk associated with deficient, or poorly performed services is unacceptably high in certain service sectors, including health services (Veres, 2009). Finally, image profiles can also be used for assessing customer satisfaction, visually presenting the positive and less-than-perfect features of the service.

The most widely used service quality research has been published by Parasuraman, Zeithaml, and Berry (1985a). In this research they identified the following factors that influence the judgement of quality: 1. reliability, 2. responsiveness, 3. competence, 4. access, 5. courtesy, 6. communication, 7. credibility, 8. security, 9. empathy 10. tangible components. To measure the expected and experienced service quality they listed 97 pairs of statements about these factors, and then, filtering out the related factors identified 5 core factors, thus

creating the SERVQUAL (SERVice QUALity) method (Brown et al., 1991). The following 5 factors were eventually identified: 1. reliability, 2. assurance, 3. tangibles, 4. responsiveness, 5. empathy. , that are measured by 22 statements valued on a 7-grade Likert scale. The original and the modified SERVQUAL has become a widely used technique for assessing service quality (used by dentistry, hotel management, airlines, banks, IT services, electricity services, higher education, etc.). The original questionnaire lists both positive and negative statements in order to capture the respondents' attention, thus the grades given to negative statements have to be re-coded. However, to save time, questionnaires containing only positive statements have become increasingly popular, and Parasuraman, Zeithaml, and Malhotra (1985b) also used a scale of only 5 values instead of the original 7-point scale, when assessing electronic services. Altogether the 22 statements are to be assessed according to the importance of the aspect for the customer, and according to the quality of the actual achievement of the aspect.

In tourism research the most popular primary research tools are surveys and observations. Personal questionnaires are generally used for assessing customer satisfaction in spite of their expensive and time-consuming character, because questionnaires can provide excellent quality information (both qualitative and quantitative data) for the service provider, and the responsiveness of the surveyed customers is usually high. This is the reason why hotels employ Guest Relation Managers, whose task includes collecting feedback from guests of the hotel (Karakasné Morvay, 2014). Besides customer questionnaires the questionnaire-based surveying of staff is also important (to gain information about their level of satisfaction, and accumulated experience), that can be used for improving service quality and increasing customer satisfaction and customer loyalty. Surveys should be conducted regularly for discovering emerging changes.

Assessment of customer satisfaction has been widely researched and several empirical results are known in the relevant literature. The present research could not provide a detailed overview, but for the sake of comparison an earlier study of Bacsı, Kovács, and Löke (2012) should be mentioned here, because this presents the results of a survey done in 2010 about customer satisfaction in some spa town - including Hévíz - in Western Hungary. This survey focused on the services available in the town, not only on those provided by the spa, but included medical treatments, bathing facilities and fitness and food services as well.

OBJECTIVES AND METHODS

The location of the primary analysis was the St. Andrew Hospital for Rheumatic Diseases in the town of Hévíz (in Western Hungary). The hospital is owned in 100% in state ownership.

Hévíz, the second most favoured tourist destinations of Hungary according to guest nights spent in commercial accommodation, possesses a unique natural attraction, the thermal lake of Hévíz, 44000m² surface, with medical mud and healing water. The Saint Andrew Hospital for Rheumatic Diseases is the caretaker of the lake and of the surrounding nature reserve area of 620000m². At the depth of 38 m in the bottom there is a cave where several hot and cold springs emerge from underground, rich in minerals, and they feed the lake, resulting in a water temperature of 24-38°C depending on the weather. Therefore the thermal lake is suitable for bathing throughout the year. The calcium-magnesium-hydrogen carbonate content of the water makes it beneficial for joint disorders and rheumatic diseases. A unique feature of the lake is the fact that the patients or guests can swim in it, or bathe in a fully vertical body position.

The first bathing establishment was built at the lake at the end of the 18th century by the Festetics family, and this was the predecessor of the Saint Andrew Hospital of Rheumatic Diseases, founded in 1952. This establishment facilitates the bathing in the medicinal water of the thermal lake, and, in addition, provides the possibility of bathing in the intramural pools filled up with the healing water flowing here through pipelines from the lake. These pools are called Pool Bath. The typical customers of the thermal lake are guests, coming on their own, while the majority of customers at the Pool Bath are medical tourists, i.e. patients suffering from a medical condition, supported by the National Health Insurance Fund (NHIF – the Hungarian acronym is OEP). However, there is an overlap between the customers of the two locations, as the thermal lake can also be accessed by tickets supported by the NHIF. This creates a duality for the service provider: they have to harmonise the demands of two distinct target groups, the diseased medical tourist and the guest more interested in recreation and enjoyment.

In order to provide treatments in the thermal lake and the spa for people of moderate incomes, Hungarian citizens, diagnosed with diseases by specialised medical practitioners, are entitled to purchase 15 spa tickets a year at discounted prices, supported by the National Health Insurance Fund (Tab. 1).

Table 1 Spa ticket types and prices in 2018 at the St. Andrew Hospital for Rheumatic diseases

Ticket Type	Hévíz Thermal Lake	Pool Bath
Normal full price ticket	3000 HUF (3-hour stay)	2000 HUF (3-hour stay)
Senior ticket (above 60 ys)	2500 HUF (3-hour stay)	1800 HUF
Student ticket (with valid student card)	2500 HUF (3-hour stay)	1500 HUF
Discounted spa ticket supported by the NHIF	1100 HUF (2-hour stay)	700 HUF

Source: Hévíz Medicinal Spa and Saint Andrew Hospital for Rheumatic Diseases. (2018). Services. (www.spaheviz.hu/en/saint_andrew/services/ and www.spaheviz.hu/en/tofurdo/services/)

The primary research method was the direct structured survey method, to allow many varied questions and achieve a large sample size at the location of the service provision (Keller, 2010), and working with an interviewer in person provides high response rates.

The survey was conducted between 27 February and 31 March 2017. The survey sample was divided to two parts: 50% was surveyed in the Pool Bath and 50% in the thermal lake, questioning altogether 300 customers – patients and guests. The questionnaires were administered by 13 interviewers – university students specialised in tourism studies. The questionnaires contained 5- point Likert scales easily understandable for respondents. The questionnaires contained the questions developed by Parasuraman et al. (1985a) for measuring perceived service quality, adapted to the spa service provider. The questionnaire used in the Pool Bath was in 96% identical to the one used in the thermal lake, to facilitate comparisons of the two locations. The 4% difference was the question: “*Staff is punctual and keep the treatment schedule*” which was asked in the Pool Bath regarding its quality and importance aspect on a 5-point Likert scale, but was not relevant, therefore not included in the questionnaire used in the thermal lake.

The method has received considerable criticisms since the ‘90-es, including the mission of the double question scale, which would considerably increase the time required for completing the survey (Veres, 2009). The double scale, though time consuming, is useful in identifying the critical points of the service, therefore the present research included it in the questionnaires. The questions referring to the components of the service – using a 5-point Likert scale - asked about the performance of the Hévíz Spa, and then about the importance of the components, and not about the expectations of the customers, as in the original model. The 5-point scale was also used instead of the original 7-point e Likert scale by Parasuraman et al. (1985a) in a service sector analysis. A Hungarian researcher Veres (2009) also questions the suitability of a 7-grade Likert scale. To minimise first-order error the performance of the service provider and the importance of the various components are asked separately in the

questionnaire. Negative statements were omitted, because Veres (2009) finds it often “disturbing, and leading to distorted answers” in Hungarian surveys. The original SERVQUAL method used a mixture of positive and negative statements to force the respondents to respond with care. In the present survey the statements of the five service dimensions - tangibles, responsiveness, reliability, assurance, empathy - were rotated in the questionnaire, to maintain respondents’ awareness. The questions related to customer satisfaction were also assessed by a 5-point Likert scale. The last few questions of the questionnaire referred to the respondents’ gender, age, permanent residence, highest educational attainment, and job. The survey was analysed by the statistical software SPSS 22. The statistical analysis of the survey results was done by descriptive statistics, frequency analyses, analyses of variance (ANOVA), correlation analyses and cross-table analyses. The evaluation followed the methodology described in Sajtos and Mitev (2007), Hofmeister Tóth, Simon, and Sajtos (2003) and Malhotra (2002). The main features of the primary research are summed up in Tab. 2.

Table 2 Summary of the features of primary research

ASPECT	PRIMARY RESEARCH OF SPA SATISFACTION
Method of primary quantitative data collection	In person questionnaire-based survey by random sampling at the location of service provision.
Working with interviewers	83% of questionnaires administrated by student interviewers, 17% administered by the leading researcher.
Location of survey	Two locations within the Hévíz Spa and St. Andrew Hospital for Rheumatic Diseases: 50% in the Pool Bath, and 50% at the Hévíz Thermal Lake.
Range of surveyed populations	Hungarian customers using the services of the Hévíz Spa: 45.4% of them are guests, and 54.5% of them are patients, medical tourists supported by the National Health Insurance Fund.
Date of data collection	27 February to 31 March, 2017.
Response rate	In Pool Bath 1:1, At thermal lake 3:1
Number of evaluated questionnaires	300

Source: Authors’ own construction

RESULTS

The characteristics of the sample, features of respondents

The sample contained 300 persons, selected from among the customers of the Hévíz Spa – according to the methodology described in the section Materials and Methods. The main

customer segment of the Hévíz Spa specialised in treating locomotor and rheumatic diseases is the elderly population, and this is reflected in the survey sample. Altogether 51.5% of the respondents is between 51 and 70 years of age, 19.7% of them are between 36 and 50, and 15.4% is above 70 (Tab. 3). The remaining 13.4% falls into the age categories of 26-35, 19-25, and 14-18 (1 person) (One female respondent refused to answer the question about her age.)

Table 3 The sample structure according to gender and age category

Age (years)	Male	Female	Total	Proportion
14-18	0	1	1	0.3%
19-25	5	6	11	3.7%
26-35	10	18	28	9.4%
36-50	28	31	59	19.7%
51-70	59	95	154	51.5%
above 70	19	27	46	15.4%
Total	121	178	299	100.0%

Source: Authors' own results

The gender structure of the sample shows a less than 1% divergence from the customer gender structure of the Pool Bath in 2016, therefore it properly represents the gender structure of the customer population. In the Pool Bath 38.7% of the respondents were male and 61.3% female (Tab. 4). In the thermal lake the majority of the customers were female, the proportion was 42% male and 58% female guests. The total sample was made up of 121 men (40.3%) and 179 women (59.7%).

Table 4 Gender distribution of the respondents at the two locations

Gender distribution	Male	Female
Pool Bath, data from 2016	38.0%	62.0%
Pool Bath (sample size: n=150) in current primary research	38.7%	61.3%
Hévíz thermal lake (sample size: n=150) in current primary research	42.0%	58.0%
Respondents (sample size: n=300) in current primary research	40.3%	59.7%

Source: Authors' own results

The largest segment of respondents according to educational attainment were those possessing a university degree (38.67%) and those completing secondary school with matriculation (37.67%), 14% completed a vocational secondary school and 3% has completed the 8 years of primary school, while 20 persons refused to answer.

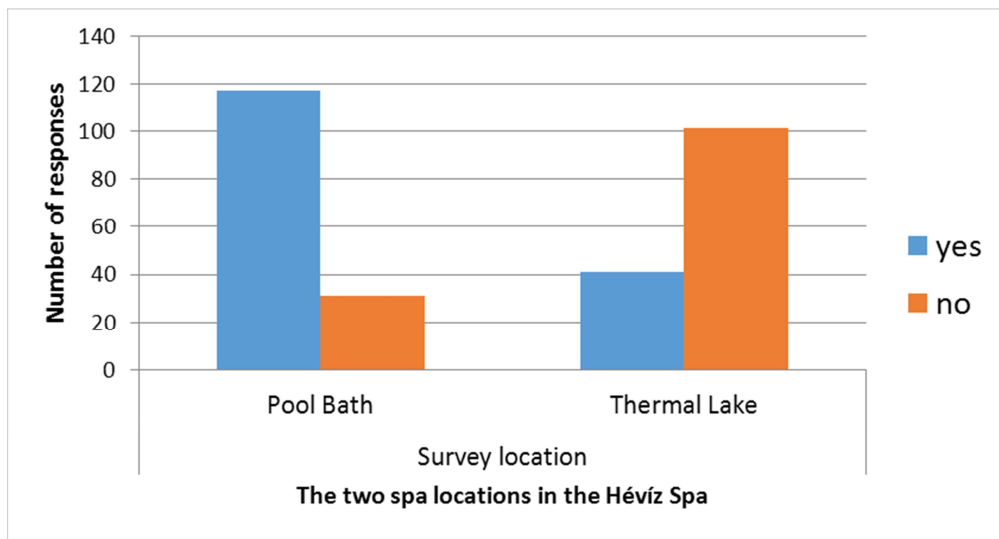
Due to the fact, that the majority of customers are elderly, nearly half (48%) of the respondents are retired. Somewhat less is the proportion of employees, self-employed entrepreneurs, managers, and the smallest group is students.

Comparison of the customers of the Hévíz Thermal Lake and of the Pool Bath

The next research question was to check whether the survey would justify the expectation that the majority of the customers of the Pool Bath are patients using the spa services by NHIF support, while the majority of the customers in the Thermal Lake are guests, and not NHIF-supported patients. The null-hypothesis is that the proportion of customers supported by NHIF is the same in the Pool Bath and in the thermal lake. The managers of the Spa do not have exact information about the proportion of the NHIF-supported patients among the customers, only a subjective expectation, that the proportion of the NHIF-supported patients is higher in the Pool Bath than in the thermal lake. The tests was aimed at finding out more precise information about this feature.

A cross-table analysis was used to evaluate 290 responses, as 10 persons gave no answers to the question whether they use the spa services by NHIF support or not. The 79.1% of the customers in the intramural Pool Bath are patients supported by NHIF and 20.9% are guests without NHIF support, while in the Thermal Lake the proportions are just the opposite, 28.9% are supported by NHIF and 71.1% are not supported by NHIF (Fig. 1). The proportion of the NHIF-supported customers in the whole sample is 54.5% and the proportion of those paying the full price without NHIF support is 45.5% (buying a full price, or senior, or student spa ticket).

Figure 1 Cross-table analysis of respondents using the service locations (Pool Bath or Thermal lake) and using normal spa tickets or discounted tickets supported by NHIF



Source: Authors' own research

The results of the cross-table analysis show that the null hypothesis should be rejected. This means that there is a difference between the two service locations – the Pool Bath and the Thermal Lake – in the aspect of using the spa with or without NHIF support. The significant majority of the Pool Bath visitors use the spa with NHIF support, while most of the customers going to the Thermal Lake have no support from NHIF. This is the reason why they are called “guests”, while the customers of the Pool Bath are called “patients”. The indicator is symmetric, i.e., if the role of two variables is changed to the opposite, the test shows a significant difference in the location of service usage between NHIF-supported customers and those not having NHIF support. The Pearson-Chi-square test shows a significant relationship between NHIF support and service location, the results are reliable according to the contingency test ($\chi^2=73.586$; $df=1$, $p=0.000$). The value of Phi =0.504 shows a medium level significant correlation between the two variables, which supports our preliminary expectations.

The customers’ gender distribution, i.e. the proportions of men and women are about the same among NHIF-supported patients and non-NHIF-supported guests (Tab. 5). The cross-table analysis found no significant difference between men and women with regard to NHIF-support ($\chi^2=0.07$; $df=1$; $p=0.934$), the difference is only 0.5% between men and women in this respect.

Table 5 The distribution of the sample by gender and NHIF support

Gender	Do you have NHIF support?		Total
	Yes	No	
Male	54.8%	45.2%	100.0%
Female	54.3%	45.7%	100.0%
Total	54.5%	45.5%	100.0%

Source: Authors’ own results

The proportion of NHIF-supported patients is 54.8% among men, and 54.3% among women. Altogether, 54.4% of all customers use the spa services with NHIF support, and less than half of them (45.5%) pay for their own spa ticket without NHIF support.

Testing the importance of service quality and quality components

According to the SERVQUAL method, adapted for the spa services, the performance of the quality factors was measured by a 5-point Likert-scale. The average of the quality

performance was measured to be 4.640, with 0.3782 standard deviation, which indicates a very high quality achievement by the service provider.

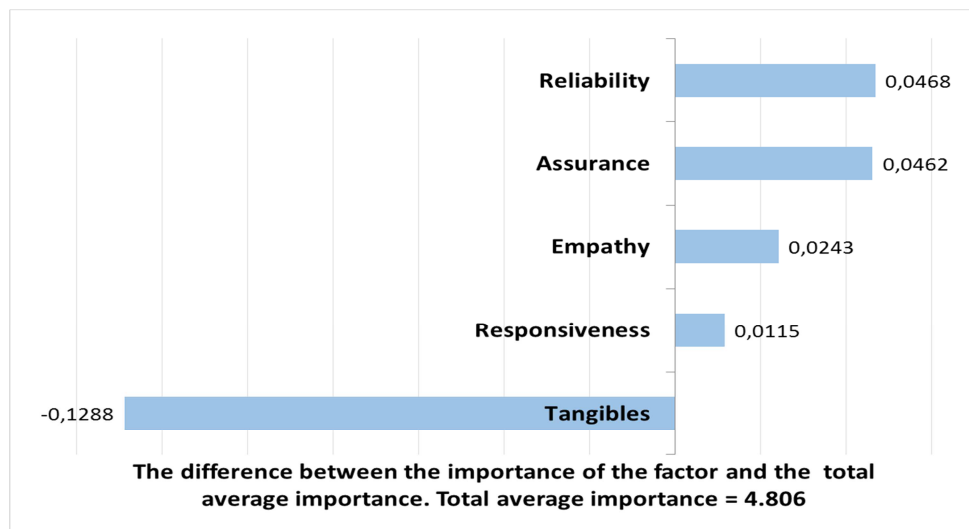
In spite of its time-consuming character, and the criticisms against the SERVQUAL model, we considered it reasonable to survey the customers' opinions about the importance of various quality components, to reveal if there is any difference between the two customer groups (patients and guests) regarding the importance of these components. Respondents rated the importance of these components rather high, average scores turned out to be between 4.43 and 4.91 on a 5-point scale. For most of the quality components the average importance-scores were higher for NHIP-supported patients. The guests gave higher scores only in two aspects, i.e.: *the whole area of the service location should be clean and hygienic* (mean score =4.884, the most important factor for guests), and *the establishment should provide space suitable for relaxation with resting chairs inside, and park and walking path outside*.

Analysis of variance was applied to test the difference between the two target groups in the assessment of importance. The null-hypothesis was that the average scores do not differ between the two customer groups. The Levene-test showed that homogeneity of standard deviations was true only for 5 of the 23 importance components, the rest had to be omitted from further analysis. The analysis of variance procedure found no difference for these 5 factors between guests and visitors, therefore the null-hypothesis cannot be rejected, the guests' opinion about the importance of these factors does not differ significantly from the patients' opinions.

A ranking of importance was set up by the average scores, which showed that for NHIF-supported patients the tangible components are the least important (all the 5 tangible factors were given scores putting them at the last 6 places in the list). According to the guests' scores 3 of the last 6 items in the list are tangible components, but the remaining 2 tangible components are ranked at around the top of the list (6th and 7th place, with an average score of 4.762 for both). These two components were: *the establishment provides space suitable for relaxation with resting chairs inside, and park and walking path outside*, and *the staff looks clean and orderly*. For NHIF-supported patients the most highly ranked factor by importance were: 1. *Staff is well trained, competent* (4.971) 2. *Staff is punctual and keep the treatment schedule* (4.896). 3. *Services are performed perfectly with no errors* (4.867), and these factors well describe what the patients consider to be the most important tasks of the service provider. Regarding the importance ranking the expectations of the two target groups, patients and guests, seem to differ considerably.

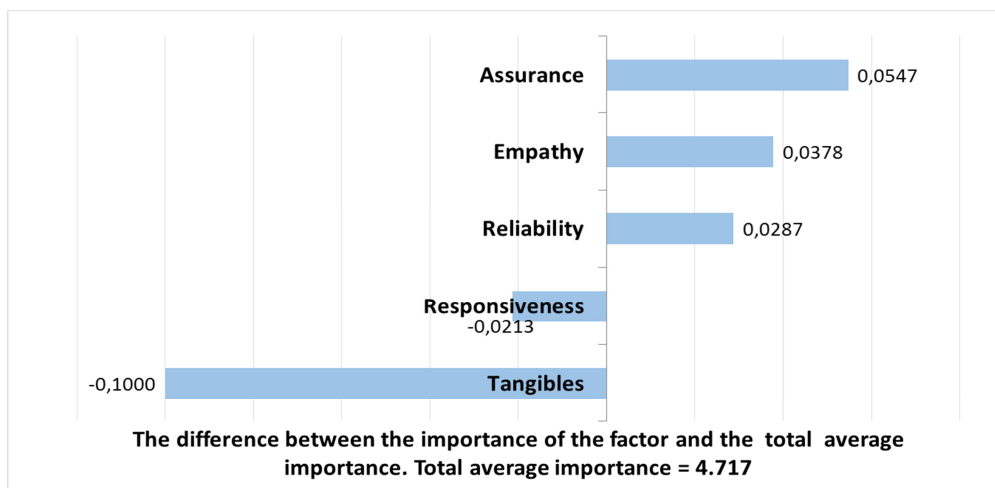
The ‘patients’ and ‘guests’ different rankings by importance of service quality components are shown in Fig. 2 and 3. The two most important factors for NHIP-supported patients were reliability and assurance (with only a very slight difference between the two), followed by empathy. Their expectations reflected in the importance scores are very high for all the four human components, while they are much less demanding in the tangible components. For guests the first three components are assurance, empathy, and reliability, all with above-average importance scores. The two least important components are responsiveness and tangible components for both target groups. It is interesting to note, that for patients the responsiveness component scored above-average, while for guests it is less than the average.

Figure 2 The difference of the average importance of various service quality components from the total average importance, by the NHIF-supported patients, on a 1-5 scale



Source: Authors' own results

Figure 3 The difference of the average importance of various service quality components from the total average importance, by the non-NHIF-supported guests, on a 1-5 scale



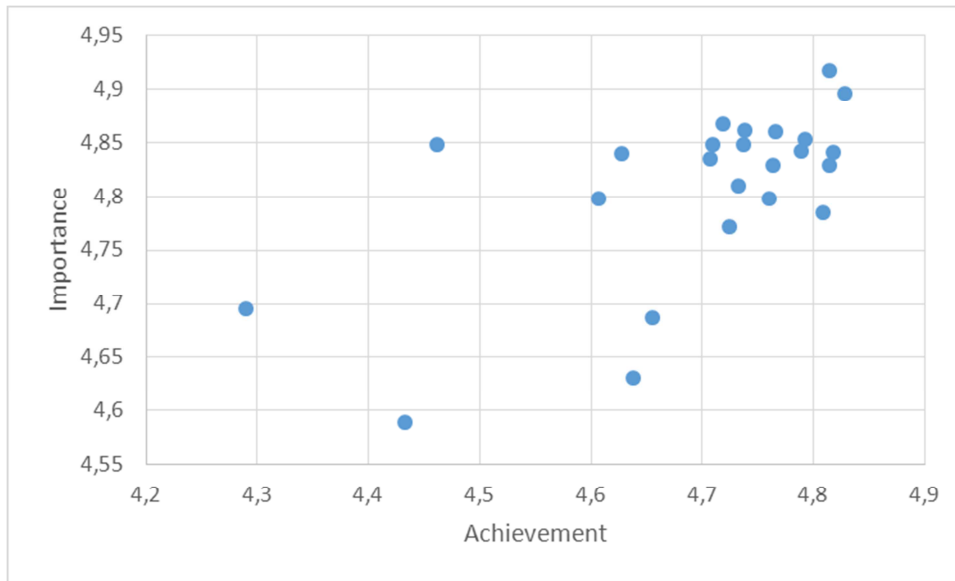
Source: Authors' own results

The graphical presentation of the quality achievement and the quality importance reflects the strategic competitive advantage of the service provider, that determine the level of customer satisfaction (Hofmeister Tóth et al., 2003). These competitive advantages are the components, that are considered important and the service provider performs well in them, as is shown in the upper right quarter of Fig. 4 and 5. The good news for the service provider is that more than half of the assessed factors belong to this group. The further improvement of these factors is not urgent, but an improvement in them can considerably increase the overall level of customer satisfaction. For NHIF-supported patients these factors of competitive advantage includes several components of professional competence, e.g: *staff is well trained and competent; staff is punctual and keeps the planned schedule of treatments, the staff of the spa show responsiveness, services are provided perfectly with no errors*, etc. For guests the factors of competitive advantage also include: *staff is well trained and competent*; and further factors are *the services provided at the treatments are personalised; the staff looks clean and orderly; staff is at their place and always available*, etc.

The components located at the lower right quarter of the figure are not important but well performing factors, therefore maintaining their good performance is also important. For both target groups this category includes: *the staff and the management behave politely*, and *the staff is friendly*. In addition, for NHIF-supported patients the component *spa staff looks clean and orderly* also belong to this category. Non-NHIF-supported guests list two additional factors here: *the staff cares about the service-related problems of the guests/patients and tries to solve them*; and *the staff generates trust and confidence*.

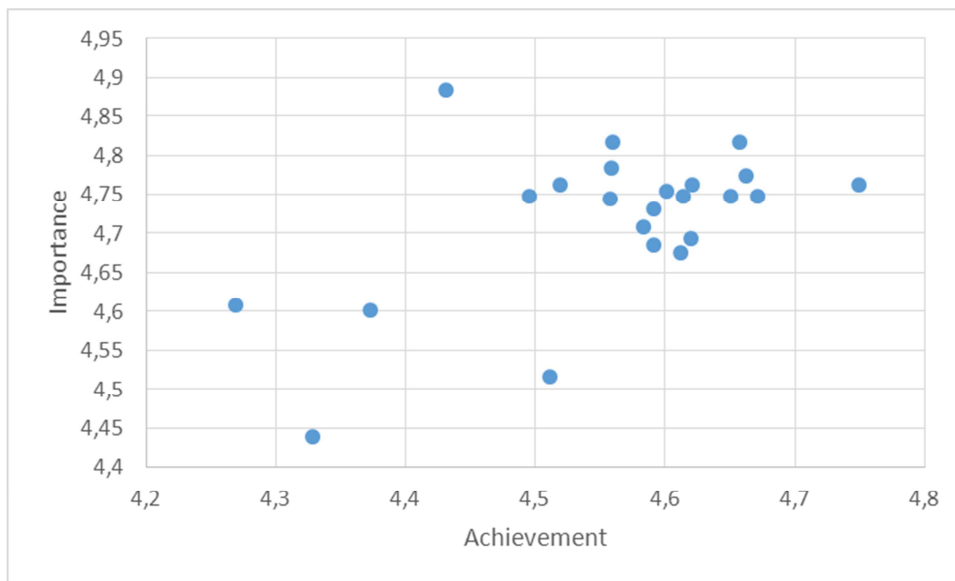
The lower left quarter is the place of service factors not important and badly performed. These factors should be improved, but their development is not very urgent. These are so-called necessary conditions or endowments, whose improvement would not considerably raise consumer satisfaction (Hofmeister Tóth et al., 2003). For NHIF-supported patients these necessary conditions include: *the buildings, outer and internal space of the spa are aesthetically pleasant; the spa is well equipped with up-to-date tools; the materials providing information (booklets and brochures, boards, notices) are easy to read and nicely designed; the establishment provides space suitable for relaxation with resting chairs inside, and park and walking path outside; the staff is an excellent source of information about the services of the spa*.

Figure 4 The opinion of the NHIF-supported patients of Hévíz Spa about the level of achievement and the importance of quality components



Source: Authors' own results

Figure 5 The opinion of the non-NHIF-supported guests of Hévíz Spa about the level of achievement and the importance of quality components



Source: Authors' own results

These necessary conditions are the same for guests and for patients, with one exception. This exception is the component *the establishment provides space suitable for relaxation with resting chairs inside, and park and walking path outside*. This component is a necessary condition for patients, while it is ranked in the upper right category of competitive advantages for guests.

The upper left quarter of the chart – i.e. the important, but not very well performing components – contain the factors that should be urgently improved. These poorly performing,

but very important factors would considerably increase customer satisfaction, and then they could become competitive advantage factors. For NHIF-supported patients two factors (*the whole area of the service location is clean and hygienic; and the spa provides personalised care for the patients according to their individual disease needs*) and for non-NHIF-supported guests three factors (*the guest feels safe and secure at the service provider; the whole area of the service location is clean and hygienic; services are provided perfectly with no errors*) belong to this category (Tab. 6 and 7). These results can be useful for the service provider in planning the quality improvement tasks for the Pool Bath and the Thermal Lake, with respect to the different expectations of the two target groups.

Table 6 The quality factors grouped into the four quarters, by the NHIF-supported patients' opinions

<p>TO BE IMPROVED URGENTLY</p> <ol style="list-style-type: none"> 1. The whole area of the service location is clean and hygienic 2. The spa provides personalised care for the patients according to their individual disease needs 	<p>COMPETITIVE ADVANTAGES</p> <ol style="list-style-type: none"> 1. The staff of the spa show responsiveness. 2. Staff responds quickly to the requests of guests/patients. 3. Staff is punctual and keeps the planned schedule of treatments. 4. Services are provided perfectly with no errors. 5. Staff works quickly and efficiently. 6. Staff is reliable and they really care about customers. 7. The staff cares about the service-related problems of the guests/patients and tries to solve them. 8. The staff is at their place and always available. 9. The customer feels safe and secure at the service provider. 10. The staff answers the customers' questions. 11. Staff is well trained and competent. 12. The staff is an excellent source of information about the services of the spa. 13. Staff generates trust and confidence. 14. The spa provides personalised care for the patients according to their individual disease needs.
<p>NECESSARY CONDITIONS, IMPROVEMENT IS NOT URGENT</p> <ol style="list-style-type: none"> 1. The buildings, outer and internal space of the spa are aesthetically pleasant. 2. The spa is well equipped with up-to-date tools 3. The materials providing information (booklets and brochures, boards, notices) are easy to read and nicely designed 4. The establishment provides space suitable for relaxation with resting chairs inside, and park and walking path outside 5. The staff is an excellent source of information about the services of the spa. 	<p>TO BE MAINTAINED AT THE CURRENT LEVEL</p> <ol style="list-style-type: none"> 1. The staff looks clean and orderly. 2. Staff and management behave politely. 3. The staff is friendly.

Source: Authors' own results

Table 7 The quality factors grouped into the four quarters, by the non-NHIF-supported guests' opinions

<p>TO BE IMPROVED URGENTLY</p> <ol style="list-style-type: none"> 1. The customer feels safe and secure at the service provider 2. The whole area of the service location is clean and hygienic; 3. Services are provided perfectly with no errors 	<p>COMPETITIVE ADVANTAGES</p> <ol style="list-style-type: none"> 1. The staff looks clean and orderly. 2. The establishment provides space suitable for relaxation with resting chairs inside, and park and walking path outside. 3. The staff of the spa show responsiveness. 4. Staff responds quickly to the requests of guests/patients 5. Staff works quickly and efficiently. 6. Staff is reliable and they really care about customers. 7. The staff is at their place and always available. 8. The staff answers the customers' questions. 9. Staff is well trained and competent. 10. The staff is an excellent source of information about the services of the spa. 11. The services provided at the treatments are personalised. 12. the spa provides personalised care for the patients according to their individual disease needs.
<p>NECESSARY CONDITIONS, IMPROVEMENT IS NOT URGENT</p> <ol style="list-style-type: none"> 1. The buildings, outer and internal space of the spa are aesthetically pleasant. 2. The spa is well equipped with up-to-date tools 3. The materials providing information (booklets and brochures, boards, notices) are easy to read and nicely designed. 4. The staff is an excellent source of information about the services of the spa. 	<p>TO BE MAINTAINED AT THE CURRENT LEVEL</p> <ol style="list-style-type: none"> 1. Staff and management behave politely. 2. The staff cares about the service-related problems of the guests/patients and tries to solve them. 3. Staff generates trust and confidence. 4. Staff is friendly.

Source: Authors' own results

Customer satisfaction

Customers were asked to evaluate their level of satisfaction on a 5-grade Likert-scale about the services provided by the Hévíz Spa.

The relevant literature suggests that there should be a positive correlation between service quality and level of satisfaction with the service. To test this relationship the scores given to the service quality factors were compared to the scores the respondents gave to the question “to what extent are you satisfied altogether with the spa” (1-5 grade Likert scale). Results showed a medium positive correlation at 1% level of significance (Pearsons correlation coefficient =0.633) between quality and level of satisfaction. The respondents ranking the

performance of the spa higher were found to be more satisfied with spa services, as has been proven in many previous research publications (Al-alak & EL-refae, 2012; Kozmáné Csirmaz, 2017).

Our hypothesis was that the level of satisfaction with services is different for guests and for patients. This hypothesis was tested at both service locations, the Pool Bath and the Thermal Lake alike, because the Pool Bath has mainly a medical treatment atmosphere while the Thermal Lake is a typical tourist service location. Multiple analysis of variance was applied in testing the following three null-hypotheses, after the necessary requirements for applying the methods were checked:

1. The level of satisfaction does not significantly differ between guests and NHIF-supported patients.
2. The level of satisfaction does not significantly differ between the customers of the Pool Bath and the of the Thermal Lake.
3. The interaction of the service location and the customer status (guest or patient) does not influence the level of customer satisfaction.

The NHIF-supported patients showed higher level of satisfaction at both locations, than guests. The level of patient satisfaction scored 4.479 in the Pool Bath and 4.585 in the Thermal Lake, while the scores of guest satisfaction were only 4.065 in the Pool Bath and 4.347 in the Thermal Lake. Both customer groups were more satisfied with the services of the Thermal Lake than of the Pool Bath.

As Table 8 presents, the customer status (guest or patient) significantly influences the level of satisfaction (a 1% level of significance). Therefore the first null-hypothesis is rejected. The second and third null-hypotheses, however, cannot be rejected, because the effect of the service location is not significant (sig.=0.056 in Tab. 8), neither the impact of the interaction of location and customer status (sig.=0.387), i.e., these factors do not influence the level of customer satisfaction. Customer status, i.e. whether customers use the spa services with support from the NHIF (patients) or without it (guests), has a significant impact on the level of satisfaction, but this impact is not too strong, as is shown by the value Eta-square of 0.035 (which is much smaller than the theoretical high value of 1). The coefficient of determination is very low, $R^2 = 0.037$, i.e. the customer status (patient or guest) is responsible only for 3.7% of the level of satisfaction. The overall average score of customer satisfaction is 4.369 (on a 5-point scale), thus the customers are altogether quite satisfied with the services of the Hévíz Spa.

Table 8 Multiple analysis of variance (dependent variable: “*To what extent are you satisfied with the spa altogether?*”, independent variables: *Location*, and Customer status defined by the question “*Are you a NHIF-supported customer?*”)

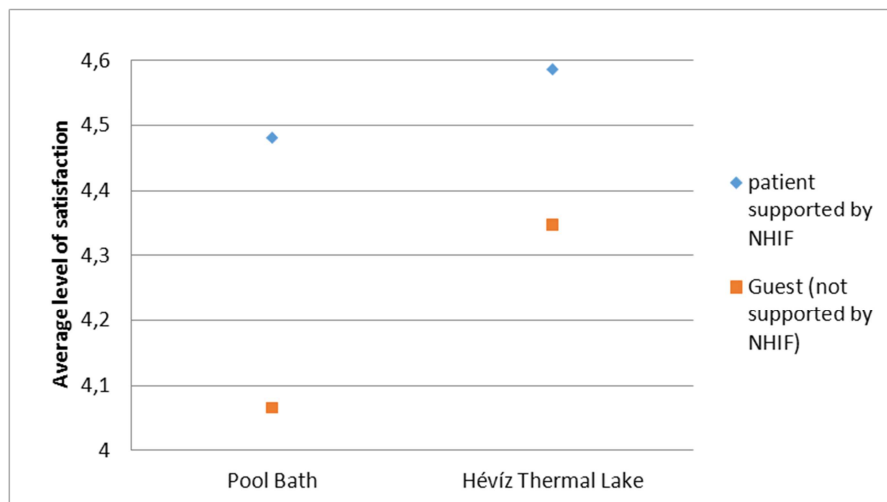
Multiple Analysis of Variance: To what extent are you satisfied with the spa altogether?						
	Residual Sum of Squares	Degree of freedom	Mean Sum of Squares	F	Sig.	Partial Eta-square
Adjusted model	5.906 ^a	3	1.969	3.612	0.014	0.037
Intercept	4066.476	1	4066.476	7460.464	0	0.963
Location	2.012	1	2.012	3.692	0.056	0.013
Customer status	5.677	1	5.677	10.416	0.001	0.035
Location x customer status	0.409	1	0.409	0.751	0.387	0.003

a: R²=0.037

Source: Authors’ own results

The graphical presentation of the results shows clearly that the NHIF-supported patients are more satisfied than non-NHIF-supported guests at both service locations (Fig. 6).

Figure 6 The overall level of customer satisfaction at the Hévíz Spa, by service location and customer target group



Source: Authors’ own results

DISCUSSION AND CONCLUSION

As Kotler and Keller (2012) state, a forward-looking company considers customer satisfaction not only a goal in itself, but an effective marketing tool, as well. The high quality service is a competitive advantage, contributing to the ability to retain customers and attract new ones. For a state-owned health institution working in the health tourism sector the benefits of positive word-of-mouth promotion by satisfied customers cannot be overestimated.

As Bacsi et al. (2012) found in their survey, the spa visitors in Hévíz were mostly returning visitors (78.4%) in 2010, whose main source of information was their former experience in the same spa. From among the services provided by the spa, customers ranked the medical treatments the highest, with a score of 4.53 followed by bathing (4.44) in a simple 5-point Likert-scale, indicating a rather high level of satisfaction with spa services. Similar or slightly lower levels of overall satisfaction were found in the present research (4.37), though the direct comparison is not reasonable, as range of evaluated components was much wider now.

The well-known positive linear relationship between quality and level of satisfaction was justified by the sample. Quality, as Veres (2009) notes, although a qualitative value judgement, can be well measured on a 1-5 grade Likert scale by the questionnaire about the performance of various service quality components defined by the SERVQUAL method adapted to spa service providers. As the analysis of variance proved, the customer status (i.e. being a guest or a patient) significantly influences the level of satisfaction. Patients are generally more satisfied both in the Pool Bath and in the Thermal Lake than guests. Surprisingly, the service location did not have any impact on the level of satisfaction. The high level of satisfaction is very valuable for the Hévíz Spa, because satisfied customers generate the positive image and fame of the service provider. Many studies – including Anderson (1985) – showed that customer satisfaction has a positive impact on the number of recommendations, and word-of-mouth promotion is strongest when customer satisfaction is very high or very low. Positive word-of-mouth promotion cannot be overestimated for state-owned health service providers because according to Hungarian legislation they are not allowed to promote their services.

Although the analysis of variance did not show any significant difference between patients and guests regarding the importance of quality components, but the ranking of the various components differ considerably. Guests, for example, considered tangible components more important, e.g. *the spaces suitable for relaxation, and the staff's cleanliness and orderly looks* were the 6th and 7th most important factors for them. For patients, however, tangible components were ranked at the bottom of the importance order.

The importance and the performance of various service quality components were plotted against each other to identify components creating comparative advantages, components requiring maintenance but not needing urgent intervention, components to be urgently improved for meeting customer expectations, and necessary conditions, which, even if improved, would not lead to significant increase in customer satisfaction. These give ideas for the service provider about what to develop in the Pool Bath and in the Thermal Lake. For the

Hévíz Spa and St. Andrew Hospital for Rheumatic Diseases two components require urgent development for the NHIF-supported patients (*individual care for patients according their diseases, and cleanliness of the establishment*) and three components for the non-NHIF-supported guests (*cleanliness of the establishment, perfect service provision without errors, and the feeling of safety and security at the service provider*).

The research proved without doubt, that the customers of the Pool Bath and those of the Thermal Lake significantly differ. The overwhelming majority of the customers in the Pool Bath are patients supported by the NHIF (79.1%), while the customers in the Thermal Lake are mainly guests not supported by the NHIF (71.1%). This relationship between customer type and service location is reasonably strong, therefore the service provider, seeking to improve service quality and customer satisfaction, should prioritise the guests' opinion when planning the development of the Thermal Lake services and focus on the patients' expectations when the development plans of the Pool Bath are considered.

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EFFICIENCY OF PRODUCTION FACTORS IN THE EU

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Abstract

The aim of the article is to consider, on the basis of indicators of effectiveness of production factors, the development of particular member states of the EU in the period 1996-2015 and relations between them in connection with the real business cycle in the EU and different starting positions (groups according to GVA per worker). The hypothesis that the development of labour productivity in the established groups of countries and at the intervals of the real economic cycle differs statistically significantly was verified based on the ANOVA test. The analysis illustrated different development and reaction of indicators of productivity in the monitored groups of the EU countries to the cyclic development of economies. It has been confirmed that the states with worse starting conditions have greater growth intensity in productivity and the business cycle does not interfere with the efficiency of production factors to any real extent.

Keywords: factor of production, productivity, European Union, business cycle

INTRODUCTION

The main trend in contemporary economies in Europe is to focus on dynamic growth, and the cornerstone of dynamic growth is the increasing effectiveness of using the factors of production, i.e. productivity growth. The development of the economies of individual EU countries is not identical and, therefore, it can be assumed that the productivity dynamics in particular states will develop differently as well. Cyclic development of an economy is an important factor influencing the productivity dynamics in particular EU states. Among other factors, the initial condition (initial level of output) of an economy can influence the actual productivity of the unit of input. Consequently, the question is how the development of productivities in particular economies is influenced by the business cycle and whether these cyclic differences in the economies influence the linkages between particular productivity indicators.

The basis for measuring country-level productivity and performance is Solow's production model. If Q represents output and K and L represent capital and labour inputs in "physical" units, then the aggregate production function can be written as: $Q = F(K, L; t)$. The variable

“t” for time appears in F to allow for technical change (Solow 1957). Other authors as Barro and Sala-i-Martin (2004), Fried, Lovell, Schmidt, and Yaisawarng (2002), Färe, Grosskopf, Norris, and Zhang (1994) or Chen and Inklaar (2016) have continued Solow’s fundamental work. Into the basic equation of production function Chen and Inklaar (2016) today, add the variable “R” which represents R & D capital (research and development). Modern growth theory builds on this neoclassical model of exogenous growth, which views the accumulation of physical capital, associated with a permanent flow of technical progress (Bhattacharjee, de Castro, & Jensen-Butler, 2009) as the driver of economic growth and productivity. Economic performance (Q) of countries to measure productivity can be expressed in economic reality in different ways. Most often, we use measures of total economic output, income or expenditure, such as Gross Value Added (GVA) at the regional level (Cuadrado-Roura, Mancha-Navarro, & Garrido-Yserte, 2000) or Gross Domestic Product (GDP) at the national level (Harper, Moulton, Rosenthal, & Wasshausen, 2009). These measures are good indicators of overall economic activity and productivity. Productivity is generally the ratio of output to input (Coelli, 2005). There are many different productivity measures, and the choice between them depends on the purpose of productivity measurement, and, in many instances, on the availability of data. The simplest and the most frequently applied measure is labour productivity. Labour productivity is defined as gross value added (or gross output) per worker and per worker-hour (O’Mahony, Rincon-Aznar, & Robinson, 2010). The size and dynamics of labour productivity in the regions is one of the indicators of regional competitiveness. The capital productivity index shows the time profile of how productively capital is used to generate value added. The importance of all factors of production is summarised in the indicator of total factor productivity (TFP). TFP is the empirical indicator of the effect of technical change on productivity (Praag & Versloot, 2008). We can find common relationships among productivity indicators. The total factor productivity determines labour productivity, not only directly, but also indirectly, by determining capital per worker (Prescott, 1998).

Differences in productivity can be identified between countries (Färe et al. 1994), regions (Le Gallo & Dall’erba, 2008, Lengyel & Szakálné Kanó, 2014), sectors (Gobel & Zwick, 2012) or firms (Korcsmáros & Mura, 2017). Productivity is influenced by many factors. One of these factors is the economic cycle. Productivity is influenced by the business cycle and productivity affects the business cycle. First, consider how business cycles affect productivity. Mayer, Ruth, and Scharler (2016) show that productivity increases in response to adverse supply, demand, and wage mark-up shocks. Productivity fluctuates endogenously over the

business cycle. Saintpaul (1993) shows that demand shocks tend to have a negative impact on productivity, both in the short and long run. An alternative approach between productivity and business cycle shows that productivity shocks play a central role in real business cycles as an exogenous impulse to macroeconomic activity. (Evans 1992). In the standard model of real business cycles (Kydland & Prescott, 1982), productivity is taken as an endogenous component (Rebelo, 2005) and productivity shocks play a central role as an exogenous impulse to macroeconomic activity (Evans 1992). We have two types of structural shocks: (1) technological shocks, that is, changes in the technological progress which affects productivity in the long-run, and (2) non-technological shocks, that is, all the other shocks that affect productivity temporarily through their effects on capital accumulation and aggregate demand (Travaglini, 2012), such as an economic crisis. Positive productivity shocks have a significant short-run negative impact on employment (Smets & Wouters, 2007) and the reaction of countries through economic performance and productivity are not the same (Suchy, Kolosta, & Koziak, 2015). Correlations between employment and productivity are negative for technology shocks, positive for non-technology shocks (Gali, 1999).

The effect on productivity growth in the diversity across countries shows that national systems of innovation have a strong influence on the way technology push and demand pull effects increase productivity. Within European countries, in the same way as in sectors, either the technological competitiveness, or the cost competitiveness model prevails as a key mechanism for productivity growth. This result points out the importance of the patterns of national specialization in innovation, alongside those in export, production and technology, and opens up an additional direction for research addressing the specificity of technological strategies and their links with specialization and performance (Crespi & Pianta, 2008). Country variability may well be the outcome of differences in terms of the institutional setting in which firms operate (Sala & Silva 2013).

The link between business cycle and productivity growth is different across countries. Costello (1993) found that aggregate output growth and productivity growth are positively correlated in the US, Germany and Japan. On the other hand, the analysis by O'Mahony & Van Ark (2003) showed no significant effect on the productivity growth measures due to the business cycle in the US and the EU. The key factor affecting productivity is the starting position (initial level) of productivity. Sustainable economic growth and development in the European Union is influenced by the starting position of old or new EU member states (Ciegis, Jurgaityte, Rakickas, & Kareivaite, 2008; Konig, 2015) and by the heterogeneity of the entrepreneurial processes across countries (Pušnik & Tajnikar 2010). As already

mentioned before, the development of economic efficiency indicators is influenced by the business cycle. In the case of human labour, the efficiency indicators are labour productivity and labour cost. Rising labour costs do not necessarily lead to higher labour productivity, but to weaker competitiveness and lower economic growth. We can find a significant relationship between the business cycle and labour cost or minimum wage (Sabia, 2014). The reaction of countries is not identical. Mesina, Strozzi, and Turunen (2009) define three types of countries: countries with mainly pro-cyclical real wages, countries with mainly counter-cyclical real wages and the rest of the world with very different patterns of cyclicity. This paper will show relationships between particular productivity indicators in the context of the business cycle. The main contribution of this paper is that we establish the value of economic normalcy of productivity indicators, by describing the pattern of indicator values during the business cycle.

OBJECTIVES AND METHODS

The main aim of the article is to consider, on the basis of selected indicators of efficiency of production factors, the development processes of particular member states of the EU in the period 1996-2015, and differences and similarities between them in connection with the real business cycle of the EU and to their different initial positions. The analysis of relations between relevant indicators can be labelled as a trend analysis.

The relationship between indexes of selected indicators is useful to express through the inequalities. The changes in economic activity can be measured by the variations in the growth rates of the firm's performance. The research question was if it is possible to establish the economic normal of economic activity on the aggregate level of the national economy. The authors define the term "Economic normal"¹ as a system of inequations that determines the positive development of the national economy. The research question was if it is possible to create the economic normal at the national economy level. The authors took into account the business cycle and the initial level of output as the main factors that can significantly affect the normal course of the national economy. Verification of economic standards monitors the trends of indicators in the various phases of the real business cycle, depending

¹ Hoffman (1992) defined "Economic normal" as a system of inequations which assess if the development of economic indicators is positive for enterprises (in the context of indicators' relationships). Application of economic normal is based on the knowledge of index analysis. A respective index represents evolution of the respective item in time (negative or positive change) and so economic normals give a recommendation of what values of particular economic indicators are expected to enable a company or an economy to reach their goals.

on the initial position of individual countries that can influence both the intensity of the trend and its direction.

The period 1996-2015 has been chosen for analysis, i.e. 20 years, in the knowledge that several states had not been members of the EU at the beginning of this period. First, it is necessary to classify the current EU-member countries according to their economic position in the first year of monitoring (1996). . As a tool, the following ratio of labour productivity has been used:

$$\frac{\frac{GVA_{i,1996}}{L_{i,1996}}}{\frac{GVA_{1996}}{L_{1996}}}, \quad (1)$$

where: $GVA_{i,1996}$ is gross value added in PPS for EU country “i” in 1996, (purchasing power standard - PPS), $i = 1, \dots, 28$.

$L_{i,1996}$ is total employment, - domestic concept, of EU country “i” in 1996, $i = 1, \dots, 28$.

GVA_{1996} is total aggregate gross value added for the whole EU (all the 28 countries) in 1996,

L_{1996} is total employment - domestic concept for the whole EU (all the 28 countries) in 1996.

The next step of the analysis was the consideration of the dynamics of the GVA index for the whole of the EU (i.e. all the 28 countries) in the period 1996-2015 to enable the construction of intervals corresponding to particular stages of the real business cycle.

The purpose of the above-mentioned steps was to create groups of countries according to their initial position, and also to monitor the dynamics of selected indicators characterizing the effectiveness of factors of production in the various intervals of the real business cycle defined for the whole of the EU. Analysis of variance (ANOVA) is a collection of statistical models used to analyse the differences among group means and to identify associated measures of variation (such as variation among and between groups), and ANOVA methods can be used to assess the importance of one or more factors, by comparing the response variable means at different factor levels. The null hypothesis states that all population means (factor level means) are equal while, the alternative hypothesis states, that at least one of these means is different from the others.

In the current analysis the ANOVA test was used to explore the influence of two factors on the variance in labour productivity growth rates, by a model without interaction. The ANOVA model for two factors without interaction may be represented by the linear statistical model, as:

$$y_{ki} = \mu + \alpha_k + \beta_i + \varepsilon_{ki}, \quad (2)$$

$$k = 1, 2, \dots, K; \quad i = 1, 2, \dots, r,$$

where y_{ki} is level of labour productivity group of countries k th according to initial position and i th the stage of the real business cycle,

$k = 1 \dots 4$ are groups of countries according to initial level of Gross value added per worker in basic year,

$i = 1 \dots 6$ are the stages of the real business cycle.

For a detailed description of ANOVA see for example (Hebák, 2007), (Montgomery & Runger, 2007).

The following indicators have been chosen: labour productivity, LP (i.e. gross value added (GVA)/ total employment-domestic concept(L)), capital productivity, CP (gross value added (GVA) / gross fixed capital formation (C)), capital-labour ratio, CLR (gross fixed capital formation (C) / total employment domestic concept (L)), real unit labour costs, RULC (compensation of employees (CE) /gross value added (Y)), aggregate productivity of factors of production. Considering two factors of production: labour (L), capital (C), we can compute the aggregate productivity of factors of production $TFP = A_1/A_0$:

$$\frac{A_1}{A_0} = \frac{Y_1}{Y_0} \cdot \left(\frac{C_1}{C_0} \right)^{-\alpha_{Ct}} \cdot \left(\frac{L_1}{L_0} \right)^{-\alpha_{Lt}} \quad (3)$$

where Y_1/Y_0 is the index of real product (of GVA in prices PPS),

C_1/C_0 is the index of real gross stock of long-term property (index of creation of gross fixed capital formation),

L_1/L_0 is the index of either the number of hours worked, or average number of employees,

α_{Lt} is the arithmetical mean of the ratio of the compensation of employees in GVA, in the base and current periods,

α_{Ct} is the arithmetical mean of the gross operating surplus in GVA, in the base and current periods, thus it applies that $\alpha_{Lt} + \alpha_{Ct} = 1$.

The index of productivity of the factors of production (TFP = Total Factor Productivity A_1/A_0) illustrates technological benefits for economic development.

All mentioned indicators were determined as real values measured in PPS, i.e. through the purchasing power parity of currency, as is recommended for international comparisons.

This evaluation deals only with the price relations of goods in various states, irrespective of the impact of supply and demand for the actual currencies (Jílek, 2005).

The calculation of average annual indices, i.e. average growth rates of monitored productivities at partial time intervals, was carried out by the geometric mean:

$$\bar{k} = \sqrt[n]{k_1 \cdot k_2 \cdot \dots \cdot k_n} = \sqrt[n]{\frac{u_1}{u_0} \cdot \frac{u_2}{u_1} \cdot \dots \cdot \frac{u_n}{u_{n-1}}} = \sqrt[n]{\frac{u_n}{u_0}}, \quad (4)$$

Where: \bar{k} is average growth rate, or, as the case may be, average growth coefficient

$k_1 \dots k_n$ are chain indices of indicators,

$u_0 \dots u_n$ are values of particular indicators.

Another aim is to consider the proportional growth rates of gross fixed capital formation (C), the number of employed people (L) and the volume of output (Y), i.e., GVA. Desirable relationships between these indicators can be derived logically: $I_Y \rangle I_C \rangle I_{CE}$ where I_Y is the growth rate of Y (GVA), I_C is the growth rate of C (gross fixed capital formation) and I_{CE} is the growth rate of CE (compensation of employees).

The relation between output Y and gross fixed capital formation C can be marked by the capital productivity (CP) and expressed by the ratio:

$$CP = \frac{Y}{C} \Rightarrow I_{CP} = \frac{\frac{Y_1}{C_1}}{\frac{Y_0}{C_0}} = \frac{Y_1}{Y_0} \cdot \frac{C_0}{C_1} = \frac{I_Y}{I_C} \quad (5)$$

If you divide Y and C on the right side of the equation by the average number of workers, (L) (total employment-domestic concept), capital productivity can be expressed as:

$$\frac{Y}{C} = \frac{\frac{Y}{L}}{\frac{C}{L}} \quad (6)$$

where

$\frac{Y}{C}$ is the capital productivity, CP,

$\frac{Y}{L}$ is the labour productivity, LP and

$\frac{C}{L}$ is the capital stock per worker, the level of technical equipment that labour can work with (capital-labour ratio, CLR).

Formula (5) clearly shows that capital productivity can be expressed as a ratio of labour productivity and capital-labour ratio. The same relations apply to the indices, i.e. growth rates as well (multiplicative model)

$$I_{\frac{Y}{C}} = \frac{I_{\frac{Y}{L}}}{I_{\frac{C}{L}}} \quad (7)$$

When the capital productivity index equals 1, then it is apparent from relation (5) that the GVA index rises as quickly as the index of gross fixed capital formation; the capital productivity remains the same and it can be called extensive development.

If the capital productivity index is higher than 1, then gross fixed capital formation compared to GVA rises less than proportionally, which results in a relative saving in material fixed capital and further related savings (Střeleček & Lososová, 2003). Thus capital productivity will increase if the growth rate of economic output (Y) is higher than the growth rate of capital (C), i.e. increasing the capital-labour ratio will result in higher labour productivity (from relation 7).

If the capital productivity index is lower than 1, then GVA rises more slowly than gross fixed capital formation, i.e. relative excess of gross fixed capital occurs.

For instance, if the capital-labour ratio increases, i. e. fixed assets per labour unit increases and labour productivity remains stable (capital rises more quickly than economic output Y), a decrease in capital productivity will occur. This may happen in the case when capital having limited productive ability rises, so that economic output, e.g. investments into infrastructure etc. could rise at the same speed or more quickly. The dynamics of capital productivity can be further assessed using different dynamics of labour productivity, resulting in various qualitative trends of development with different consequences, which will be dependent on the real business cycle.

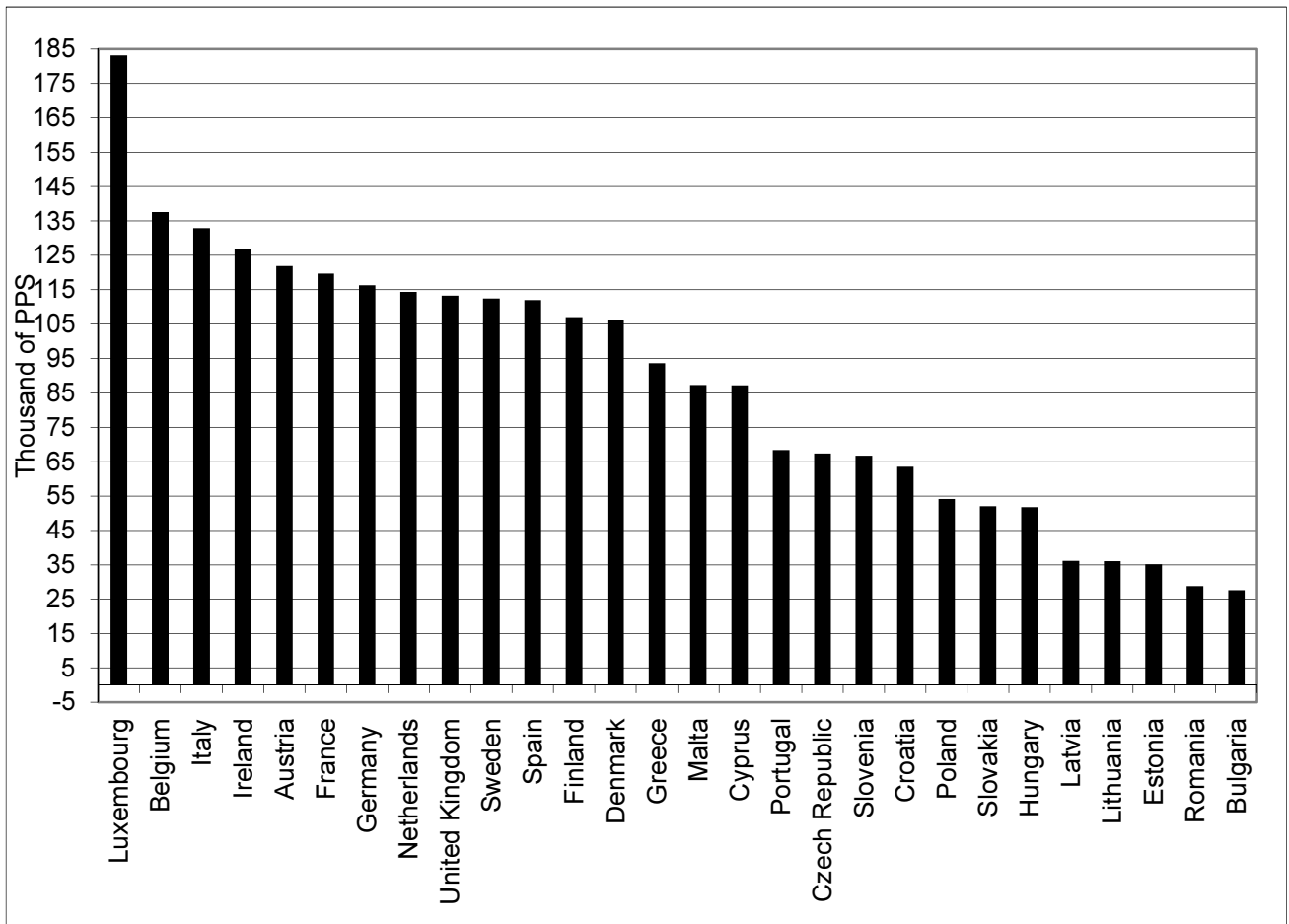
RESULTS

The individual steps of the analysis are based on the primary distribution of the 28 EU-countries to groups (see the methodology). Figure 1 shows GVA per worker (domestic

concept) in the individual countries compared to the average GVA per worker in the EU of 28 countries, in the starting year of monitoring (1996) in descending order, expressed as percentages of the EU-average. Based on these collected data, the EU-countries were divided into three groups.

The first group includes the countries in which GVA per worker is higher than the average value of the 28 EU-member countries, i.e. the index value is higher than 100%. The second group consists of countries in which GVA per worker is ranging from 50% to 100% of the average value in the EU. The third group represents the countries in which the value is not higher than 50%.

Figure 1 Gross value added (GVA) per worker in basic year 1996 (EU 28 - 100%)



Source: authors' calculation based on data of Eurostat

Since Luxembourg's GVA per worker is significantly higher than that of the other countries and, therefore, it would fundamentally distort the total results, this country was monitored separately.

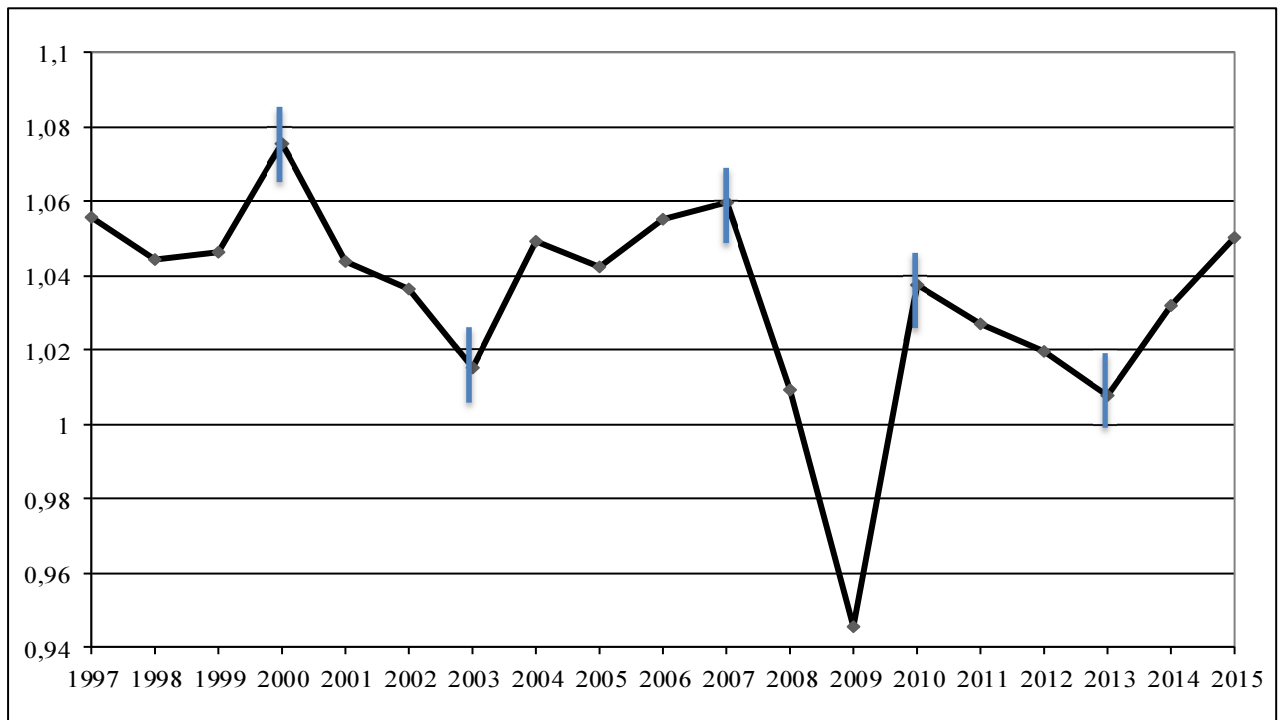
Group 1: Belgium, Italy, Austria, Ireland, France, Germany, Spain, Netherlands, Sweden, United Kingdom, Finland, Denmark

Group 2: Malta, Greece, Cyprus, Portugal, Slovenia, Czech Republic, Slovakia, Hungary, Croatia, Poland

Group 3: Latvia, Estonia, Lithuania, Bulgaria, Romania.

The next step was the construction of the intervals that define the stages of the real business cycle (Figure 2). The stages were inferred from the annual development (growth) of GVA in the whole of the EU in PPS. Adamowicz & Walcyk, (2011) show in their paper, that one can observe progressive synchronization of cyclical fluctuations in the ‘new’ and ‘old’ EU member states, particularly evident in the timing of turning points and duration of the recent recession. Dissimilarities were noted in the values of the turning points that resulted in disparity in the amplitude and intensity of cyclical changes. These were higher in the ‘new’ EU countries, especially in the Baltic, states than in the EU15. Since the EU enlargement, the ‘new’ EU economies boomed with rates of cyclical growth of the gross value added and manufacturing production (the latter to a lesser degree), much above the EU15 averages.

Figure 2 Growth rate of GVA in the European Union (28 countries)



Source: Own calculations based on the data of Eurostat

Looking at the development of GVA for the whole of the EU (28 countries), it is possible to identify the intervals by which we can cut up the 20-year period (1996 – 2015) into six periods:

- Period 1: 1996 – 2000 is characterized by stable or slightly rising annual GVA increases,

- Period 2: 2000 – 2003 is characterized by decreasing GVA growth rates (,
- Period 3: 2003 – 2007 indicates the trend of repeatedly increasing GVA growth rates,
- Period 4: 2007 – 2009 can be described as a period of sharply decreasing GVA growth rates, with, in 2009, the GVA growth rate reaching a negative value, i.e. the growth rate in this year was lower than 1,
- Period 5: 2009 – 2013. The annual growth rates did not fall below 1 but still growth rates were decreasing in this period.
- Period 6: 2013 – 2015 increasing increments of GVA.

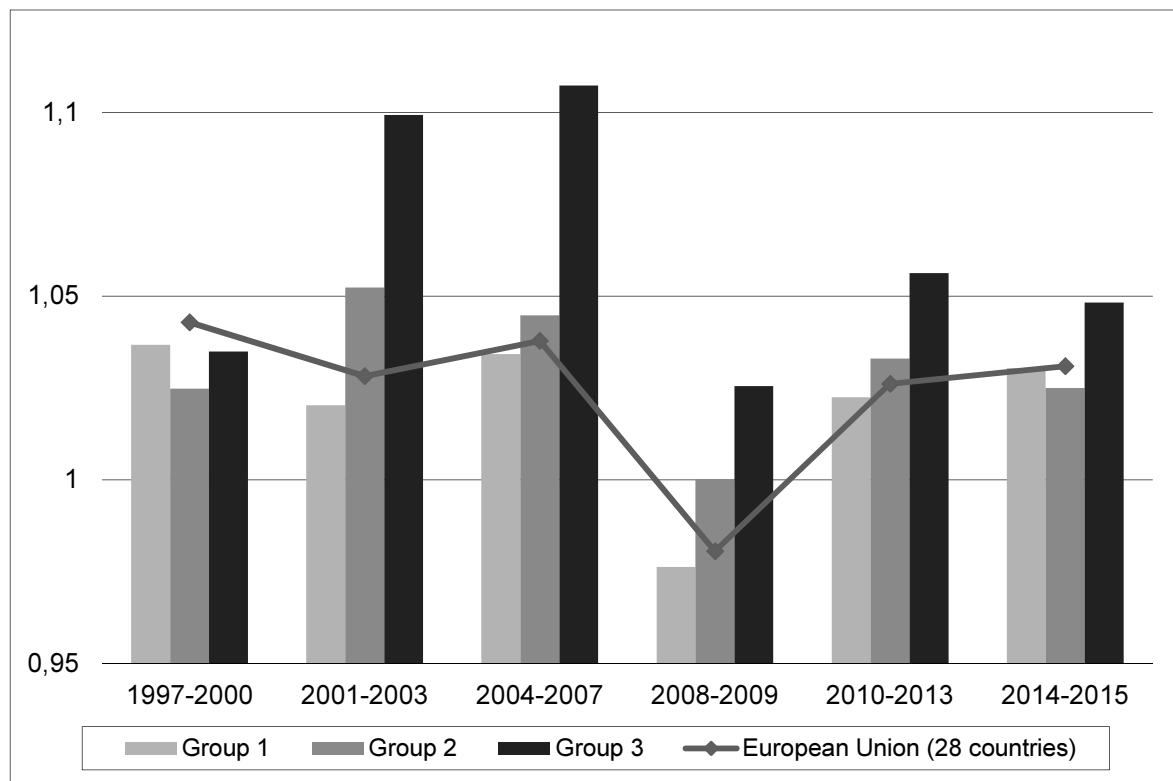
To illustrate different performance levels of the three country groups not only the level of labour productivity, but also the annual labour productivity growth rates are presented in Table 1 and Figure 3. As is shown in Table 1 the level of labour productivity differs in the three country groups.

Table 1 Average annual labour productivity per each period in thousands of PPS per employment

GEO/TIME	1996-2000	2000-2003	2003-2007	2007-2009	2009-2013	2013-2015
EU (28 countries)	36.91	42.90	48.05	49.75	52.71	56.41
Group 1	43.28	48.88	53.83	55.15	57.75	61.47
Group 2	25.52	29.01	34.00	36.30	39.62	42.53
Group 3	10.35	13.95	19.60	24.37	27.93	31.73
Luxembourg		69.92	81.61	82.53	86.32	96.33

Source: Own calculations based on the data of Eurostat

According to the expectations, the first group is above the average of the EU (of 28 countries). This group includes mainly the “old” member states, which have the most influence on the level of the EU-average. The second group of states reaches approximately 68%-75% of the labour productivity level of the EU-average in each period, and the third group varies between 28% and 53% of the EU-average. Luxembourg, which was assessed separately, significantly exceeds the average labour productivity of the EU (of 28 countries): the index varies in the periods around 165% the EU-average. The dynamics (Figure 3) differs from the indicator levels. The average growth rate of labour productivity in the third group of countries exceeds significantly both the average of the EU and of the first group of countries. The dynamics of labour productivity in the second group of countries is slightly above the average growth rate of labour productivity in the EU.

Figure 3 Average growth rate of labour productivity

Source: Own calculations based on the data of Eurostat

Regarding capital productivity in its absolute terms (Table 2), there are no such apparent differences as for labour productivity (Figure 3). The values of this indicator, in the first group of countries, are, again, as expected, approximately the same as of the EU average (of 28 states). The major differences between the second and third group are not obvious, and during the first two periods of the cycle, the third group of countries even exceeds the second one. This can be the result of the ongoing restructuring of the economy, occurring mainly in the second group, where higher investments into fixed capital result in a lower level of the capital productivity. The third group of countries are lagging according to the level of capital productivity in the last observed periods. During the period of growth, this is reflected in lower levels of capital productivity.

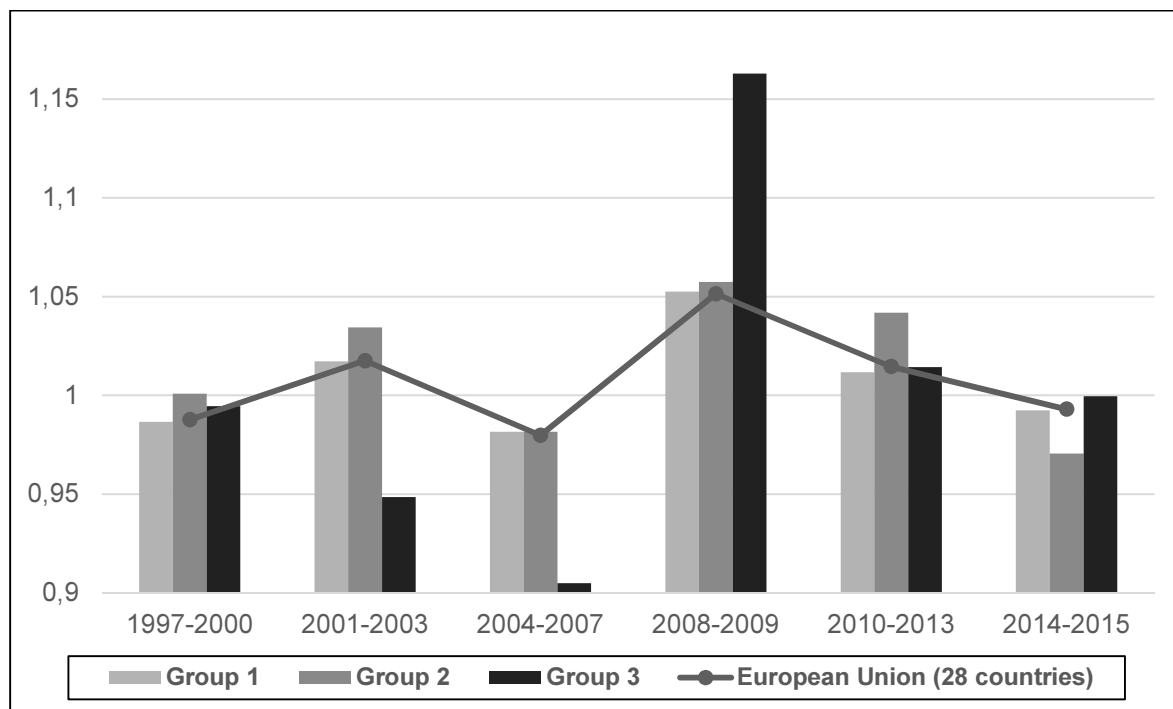
Table 2 Average annual capital productivity per each interval

GEO/TIME	1996-2000	2000-2003	2003-2007	2007-2009	2009-2013	2013-2015
EU (28 countries)	4.22	4.26	4.14	4.19	4.52	4.60
Group 1	4.27	4.28	4.16	4.26	4.54	4.62
Group 2	3.44	3.80	3.84	3.85	4.47	4.56
Group 3	4.69	4.11	3.31	3.07	3.70	3.82
Luxembourg		4.07	4.50	4.51	4.75	4.94

Source: Own calculations based on the data of Eurostat

The average growth rates of capital productivity are recorded in Figure 4. Figure 4 shows significant fluctuations in the growth rate of capital productivity (especially for the third group of countries). There is an obvious impact of the real business cycle. The pace of growth in capital productivity is converging between the country groups in the period 2013-2015 (due to an overall growth of all the countries). Comparing Figures 3 and 4, an opposite (mirror) development can be inferred, which follows from the described relations between the respective indicators, as shown in the methodology.

Figure 4 Average growth rate of capital productivity

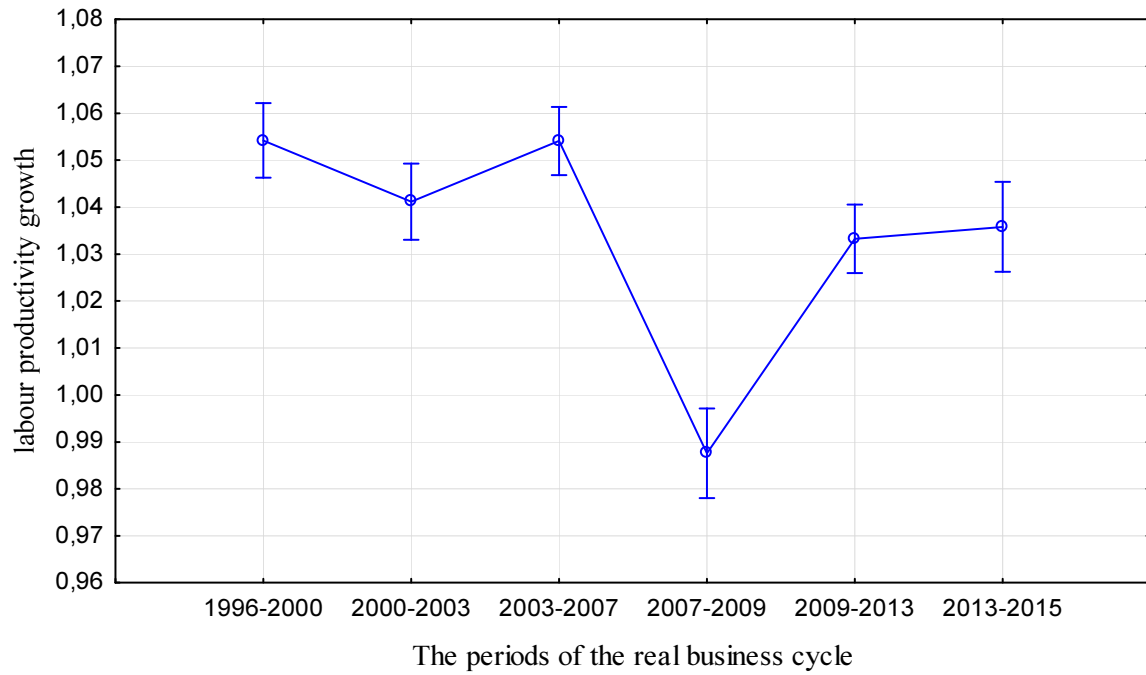


Source: Own calculations based on the data of Eurostat

The statistical method ANOVA was used to verify the above grouping of the countries, according to the initial level of the labour productivity and to the defined time periods of the real business cycle.

The ANOVA test showed statistically significant difference in labour productivity dynamics in the individual phases of the real business cycle (Figure 5). Proven was also a statistically significant difference in the dynamics of labour productivity among the three different groups of countries, according to the initial level of the indicator (Figure 6).

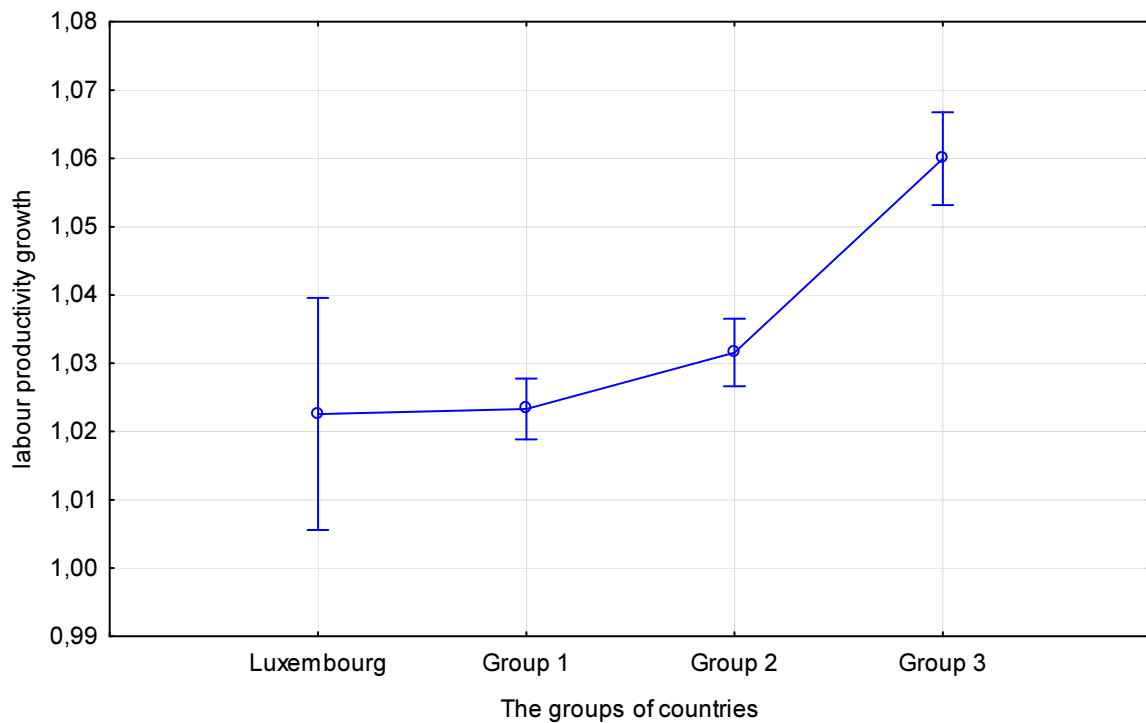
Figure 5 Labour productivity growth rate in the periods of the real business cycle decomposed using ANOVA



Current effect: $F(5, 509)=36,013, p=0,0000$
 Vertical columns indicate a 95% confidence interval

Source: Own calculations based on the data of Eurostat

Figure 6 Labour productivity growth rates in the groups of countries decomposed using ANOVA



Vertical columns indicate a 95 % confidence interval
 Current effect: $F(3, 509)=27,652, p=,00000$

Source: Own calculations based on the data of Eurostat

In the next step, the following indicators were included: total factor productivity (see the methodology), capital-labour ratio and real unit labour costs, or their growth rates. The relations between these indicators were investigated within each group separately.

Analysing these links within the first group of countries, tables 3 and 4, show that during stable or increasing GVA growth rate periods (periods 1, 3, and 6), the first group of countries has some common features:

- 1) The relations between indicators are almost identical, i.e. capital-labour ratio grows dynamically (6-7%), which results in an average decrease of annual capital productivity (-1 to -2%) and, so, there is an annual decrease in the real unit labour costs growth rate as well; to put it more simply, the labour costs are decreasing. It can be noted that all the three periods are characterised by the highest growth rates of labour productivity (above 3%) and by small growth rates of total productivity (around 1%).
- 2) There is a relative excess of gross fixed capital formation (because $I_{CP} < 1 \Rightarrow I_Y < I_C$ see formula 5, GVA grows slower than C), i.e. the capital in these periods does not have sufficient production potential. Many cost-intensive investments are carried out which are likely to have an effect in the long term.

Table 3 Average annual growth rates of indicators - Group 1

Indicator	1997-2000	2001-2003	2004-2007	2008-2009	2010-2013	2014-2015
Labour productivity, LP	1.0368	1.0203	1.0343	0.9763	1.0224	1.0304
Capital productivity, CP	0.9836	1.0168	0.9810	1.0533	1.0114	0.9899
Total factor productivity, TFP	1.0143	1.0161	1.0113	1.0121	1.0218	1.0097
capital-labour ratio, CLR	1.0620	1.0062	1.0578	0.9271	1.0101	1.0612
real unit labour costs, RULC	0.9992	1.0011	0.9973	1.0243	0.9948	0.9868

Source: Own calculations based on the data of Eurostat

Table 4 Relationships between indicators – Group 1

Number	Periods	
1	1996-2000	$I_{LP} > I_{TFP} > 1 > I_{RULC} > I_{CP}$
2	2000-2003	$I_{LP} > I_{CP} > I_{TFP} > I_{RULC} > 1$
3	2003-2007	$I_{LP} > I_{TFP} > 1 > I_{RULC} > I_{CP}$
4	2007-2009	$I_{CP} > I_{RULC} > I_{TFP} > 1 > I_{LP}$
5	2009-2013	$I_{LP} > I_{TFP} > I_{CP} > 1 > I_{RULC}$
6	2013-2015	$I_{LP} > I_{TFP} > 1 > I_{CP} > I_{RULC}$

Source: Own calculations based on the data of Eurostat

The period of decreasing GVA growth rates for the first group of countries (periods 2 and 4 and 5) can be described by these facts:

In these periods, the two highest annual growth rates of capital productivity can be noted, which is obviously induced by considerable investments in the previous periods (especially in period 4 GVA decreases slower than investment (GVA – decline to 2.8%; C – decline to 7.7%). Probably for this reason, total productivity is still slightly growing. However, labour productivity lags behind and, in period 4 on average, the labour productivity growth rate is declining annually, due to the crisis in 2009.

In Tables 5 and 6, the same indicators are monitored for the second group of countries, including the Czech Republic, and the relations between them.

Table 5 Average annual growth rates of indicators - Group 2

Indicator	1997-2000	2001-2003	2004-2007	2008-2009	2010-2013	2014-2015
Labour productivity, LP	1.0248	1.0523	1.0448	1.0002	1.0330	1.0250
Capital productivity, CP	0.8958	1.0403	0.9759	1.0413	1.0222	0.9667
Total factor productivity, TFP	1.0268	1.0295	1.0126	1.0269	1.0403	0.9950
capital-labour ratio, CLR	1.0620	1.0321	1.0689	0.9366	0.9746	1.0599
real unit labour costs, RULC	0.9968	1.0027	0.9969	1.0161	0.9939	0.9937

Source: Own calculations based on the data of Eurostat

Table 6 Relationships between indicators – Group 2

Number	Periods	
1	1996-2000	$I_{TFP} \rangle I_{LP} \rangle 1 \rangle I_{RULC} \rangle I_{CP}$
2	2000-2003	$I_{LP} \rangle I_{CP} \rangle I_{TFP} \rangle I_{RULC} \rangle 1$
3	2003-2007	$I_{LP} \rangle I_{TFP} \rangle 1 \rangle I_{RULC} \rangle I_{CP}$
4	2007-2009	$I_{CP} \rangle I_{TFP} \rangle I_{RULC} \rangle I_{LP} \rangle 1$
5	2009-2013	$I_{TFP} \rangle I_{LP} \rangle I_{CP} \rangle 1 \rangle I_{RULC}$
6	2013-2015	$I_{LP} \rangle 1 \rangle I_{TFP} \rangle I_{RULC} \rangle I_{CP}$

Source: Own calculations based on the data of Eurostat

Some differences appear in the second group of countries, i.e. countries for which lower labour productivity was reported in 1996, which can be due to the fact, that most of these national economies are linked up with the economies of the first group of countries. Therefore, they undergo the same stages of the real business cycle with some delay and often with lower intensity. It is obvious that:

- 1) The average rate of labour productivity grows in all periods (in period 4, when a worldwide decline was reported, the annual rate shows no change). The growth rate of labour productivity in the 2nd and 3rd periods exceeds the growth rate of total productivity and capital productivity, even with the constant growth of capital-labour ratio.

- 2) A slightly negative development of relations between indicators appears in period 4. In this period, the relations between indicators develop similarly to the first group of countries. A slightly positive development is obvious in periods 5 and 6.
- 3) RULC in this group of countries tend to develop similarly to the first group, i.e. it tends to decrease slightly in all periods except for period 4, known as a worldwide crisis period. In this period RULC grows annually by 1.61% on average, meaning that the compensations of employees do not respond to the decline of gross value added promptly which leads to cost remanence.

The third group of countries (countries with the worst starting position at the beginning of the survey) show patterns corresponding to the second group of countries in some features (Tables 7 and 8):

- 1) Labour productivity in the first three periods reaches the highest annual growth in all groups of studied countries (3.49% to 10.73%). In this period, these countries invest, i.e. the capital-labour ratio grows by more than 13% (in period 3 by 18.9%). Therefore, capital productivity declines and total productivity levels off. The average annual growth of labour productivity is always higher than the growth rate of real unit labour costs, except in period 4. In period 4 of the worldwide crisis, labour productivity still increases by 2.55%. The capital productivity grows significantly (by 16%).
- 2) The average annual growth of labour productivity is always (except for period 4) higher than the growth rate of real unit labour costs (RULC).

Table 7 Average annual growth rates of indicators - Group 3

Indicator	1997-2000	2001-2003	2004-2007	2008-2009	2010-2013	2014-2015
Labour productivity, LP	1.0349	1.0993	1.1073	1.0255	1.0563	1.0483
Capital productivity, CP	0.9945	0.9485	0.9049	1.1629	1.0143	0.9995
Total factor productivity, TFP	0.9946	1.0123	0.9941	1.0934	1.0279	1.0219
capital-labour ratio, CLR	1.1546	1.1366	1.1890	0.8426	1.0578	1.0225
real unit labour costs, RULC	1.0000	0.9887	1.0117	1.0295	0.9808	1.0283

Source: Own calculations based on the data of Eurostat

Table 8 Relationships between indicators – Group 3

Number	Periods	
1	1996-2000	$I_{LP} > 1 = I_{RULC} > I_{TFP} > I_{CP}$
2	2000-2003	$I_{LP} > I_{TFP} > 1 > I_{RULC} > I_{CP}$
3	2003-2007	$I_{LP} > I_{RULC} > 1 > I_{TFP} > I_{CP}$
4	2007-2009	$I_{CP} > I_{TFP} > I_{RULC} > I_{LP} > 1$
5	2009-2013	$I_{LP} > I_{TFP} > I_{CP} > 1 > I_{RULC}$
6	2013-2015	$I_{LP} > I_{RULC} > I_{TFP} > 1 > I_{CP}$

Source: Own calculations based on the data of Eurostat

The tables 9 and 10 illustrate the average growth rates of the monitored indicators and the relationships between them in the EU (EU 28). The inequality in the period 4 (global economics crisis) shows a high level of consensus with the inequalities of all three groups of countries. The differences can only be seen in the dynamics of the indicators (The group 1 is characterized by the highest decrease of indicators). In the post-crisis period (Period 5) is obvious the increase of efficiency of production factors (both partial I_{LP}, I_{CP} and total I_{TFP}), i.e. all productivity indices were greater than 1. The differences between groups of countries are in the position productivity indices in relevant inequality.

The periods of higher growth (the period 3 and 6) are characterized by a system of inequalities $I_{LP} > I_{TFP} > 1 > I_{RULC} > I_{CP}$ (Table 10). This inequality exists for each group of countries with minor differences, based on the level and dynamics of the indicators.

Table 9 Average annual growth rates of indicators – EU (28 countries)

Indicator	1997-2000	2001-2003	2004-2007	2008-2009	2010-2013	2014-2015
Labour productivity, LP	1,0429	1,0282	1,0378	0,9806	1,0262	1,0309
Capital productivity, CP	0,9876	1,0175	0,9798	1,0513	1,0145	0,9929
Total factor productivity, TFP	1,0165	1,0232	1,0098	1,0131	1,0207	1,0129
capital-labour ratio, CLR	1,0559	1,0105	1,0593	0,9327	1,0115	1,0383
real unit labour costs, RULC	1,0020	0,9983	0,9948	1,0177	0,9975	0,9964

Source: Own calculations based on the data of Eurostat

Table 10 Relationships between indicators – EU (28 countries)

Number	Periods	
1	1996-2000	$I_{LP} > I_{TFP} > 1 > I_{RULC} > 1 > I_{CP}$
2	2000-2003	$I_{LP} > I_{TFP} > I_{CP} > 1 > I_{RULC}$
3	2003-2007	$I_{LP} > I_{TFP} > 1 > I_{RULC} > I_{CP}$
4	2007-2009	$I_{CP} > I_{RULC} > I_{TFP} > 1 > I_{LP}$
5	2009-2013	$I_{TFP} > I_{LP} > I_{CP} > 1 > I_{RULC}$
6	2013-2015	$I_{LP} > I_{TFP} > 1 > I_{RULC} > I_{CP}$

Source: Own calculations based on the data of Eurostat

DISCUSSION AND CONCLUSION

The analysis demonstrates diverse development and response patterns of the productivity indicators in the observed groups of the EU countries, to the real business cycle during the years 1996-2015. In general, the starting positions of the states, as a standpoint for their division into groups, will obviously determine the dynamics of the indicators. The hypothesis that the development of labour productivity in the 3 established groups of countries, and at the periods of the real business cycle differs statistically significantly, was verified based on a two-factor ANOVA test.

The analysis of one-factor productivities shows that the rate of labour productivity grows in the same periods when GVA grows, i.e., economic output measured by gross value added grows faster than the amount of labour as a factor of production, measured by the number of employees. It holds true in all the 3 groups of countries. A rather different situation is seen regarding capital productivity. The dynamics of capital productivity decreases in the periods when the growth of GVA is increasing in the EU on average. In some groups of countries, the intensity of growth rate differs but the trends are the same. Hence, the growth rate of gross fixed capital formation is higher than the growth rate of the output (gross value added). This may be due to investments into capital with lower production capacity, and to time delay. In the periods of decreasing growth rates of gross value added, the tendency and intensity of one-factor productivity indicators (labour productivity, capital productivity) are inverse. This situation is explained, among other things, by the relationship between individual indices, as described in the methodology.

Focused on the various groups of countries, the first group (countries with the highest initial GVA per worker, i.e. higher than 100% of the EU average) most exactly corresponds to the annual average dynamics of the EU as a whole. A strong relationship to the business cycle is obvious in the dynamics of the indicators of capital-labour ratio, capital productivity and labour productivity. The annual average growth of labour productivity exceeds the dynamics of real unit labour costs except for the crisis years 2007-2009, and so it has an anti-inflationary effect. On the contrary, the total factor productivity (TFP) keeps growing constantly, regardless of the business cycle.

Some differences are obvious in the second group of countries, including the Czech Republic and other states that accessed EU in 2007. In these countries, GVA per worker ranged between 50 – 100% of the EU average in 1996. Many national economies in this group are connected to the economies of the first group of countries, which can lead to some delay or lower intensity while undergoing the business cycle. Regardless of the business cycle, labour productivity and gross value added grow faster than capital productivity and the stable capital stock per worker in the first three monitored periods, until most of these states joined the EU. The output growth rate was higher than the input growth rate when capital, as a factor of production, grew faster than labour. The last three studied periods (2007-2009, 2010-2013, 2013-2015) are characterised by a lower growth rate of gross fixed capital, which could lead to growing capital productivity and total factor productivity (except for the period 2013-2015). The growth was initiated by labour productivity in the first three periods, and, by the following growth of capital productivity.

The third group of countries (having less than 50% of GVA per worker of the EU average) tend to develop similarly to the second group, with high labour productivity growth rates in the first three periods (in period 2003-2007 the annual growth rate was 10.73% which was the highest average annual growth rate) and steep growth of capital-labour ratio, which caused a decline in the growth rate of capital productivity, while TFP remained stable. Changes of the business cycle are not so obvious in these economies, as labour and capital productivity still continue to grow in periods of the worldwide economic decrease.

The analysis of the patterns of selected indicators for the groups of countries over the 20 years has shown that economic growth should remain in state of “economic normal” with slight modifications: This relation of the indicator trend can be confirmed by the development of the first group of countries ("old" Member States). In the other two groups there are various modifications resulting from the different initial positions of the economies of the countries regarding the level of GVA per worker, often showing higher intensity of trends and higher fluctuations). This conclusion is confirmed by Kutan & Yigit (2007), stating that in the new EU Member States productivity growth and convergence rates increase with the integration into the EU.

An example is the third group of countries, in which real unit labour costs are growing, but at the same time, labour productivity growth rate is higher than the growth rate of unit labour costs. The analysis demonstrates that cyclic economic fluctuations influence the effectiveness of utilisation of the production factors, and this confirms previous results (Aghion & Saint-Paul 1998); however, other factors such as the initial levels of monitored indicators also play an important role. States with inferior initial positions grow more intensively in productivity and the business cycle does not affect their productivity so much. Gradual convergence to the EU average seems to be reasonably expected from this analysis.

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