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FLOWS IN THE SPATIAL ECONOMY

REPORT ON THE 16TH ANNUAL MEETING OF HUNGARIAN REGIONAL SCIENCE ASSOCIATION

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The Hungarian Regional Science Association (HRSA) organized its 16th Annual Meeting on October 18-19, 2018 at the Faculty of Economics and Business of John von Neumann University in Kecskemét. This meeting hosting a record number of participants (200) welcomed presentations discussing various flows – labour, capital, knowledge, trade, etc. – in the spatial economy. As customary, the general meeting of the Association was held during the first morning of the event. The presidential report outlined the activities of the reporting year and future of HRSA, while the Audit Committee Report highlighted the organisation's continuous financial stability. The general meeting was concluded by attending participants' vote on the Pro Regional Science Award.

In 2018, the scientific programme was restructured and complemented with new elements, an English-language roundtable session on scientific publishing was held following the General Assembly with the participation of *David Bailey* (Aston University), *Andrea Morrison* (Utrecht University), *Judit Timár* (HAS CERS Institute for Regional Studies) and *Balázs Lengyel* (HAS CERS Institute for Economics) and moderated by *Gábor Lux* (HAS CERS Institute for Regional Studies). Participants shared their publishing and editing experiences with the audience and highlighted the growing importance of the internet and social media surfaces in disseminating and enhancing the impact of scientific publications.

Conference participants were greeted by *Piroska Ailer,* rector of John von Neumann University before the first English-language plenary session, and presentations followed under the leadership of HRSA President *Zoltán Gál*.

David Bailey, professor of Aston University and editor-in-chief of Regional Studies presented the main industrial policy consequences of Industry 4.0 referring to technological innovations (artificial intelligence, biotechnology, nanotechnology, robotics, etc). Using EU terminology, Industry 4.0 describes production organisation processes with the help of virtual computing model-based production chains and autonomous communicating objects. These processes require substantial economic revaluation on behalf of both industrial (technology sharing, innovation, new types of knowledge) and political (rethinking industrial policy,

infrastructural developments, support system) stakeholders. The presentation reflected on the FDI attraction capacity of Hungary, possibilities to decrease vulnerability and increase added value as well as the potential industrial impacts of Brexit.

Andrea Morrison, associate professor of Utrecht University held a presentation on the innovation outcomes of large-scale migration towards the USA between 1850 and 1920. Thirty million immigrants arrived to the USA in the examined period leading to a general increase of labour supply, decreasing wages, and job losses for the local population due to competitive market effects. Immigrants and their various subgroups were liable to produce other types of impacts. Empirical data-based modelling suggests that qualified scientists may contribute to the generation of new knowledge and bolster local research and innovation activities, while enhancing the scientific performance of American researchers in their respective sector.

Magdolna Sass, senior research fellow of HAS CERS Institute of Economics, in examining the objectives of the main FDI stakeholders in Central and Eastern Europe, highlighted the role of indirect impacts alongside those of direct investment (e.g. creation of FDI chains and networks, establishment of regional sites, tax optimisation, etc.) as well as the methodological problems related to the divergence of official statistics and effective investors.

The plenary session of the first day was followed by eight parallel sessions (of which two in English-language) and during the second day of the conference, eight further parallel sessions (of which one in English-language) were organised. The two blocks of parallel sessions contained 140 presentations discussing various aspects of spatial economic processes: innovation and knowledge networks, metropolitan development models, shrinking small-and mid-sized towns, digital innovation systems, rural spatial processes and environment, social flows, border research, tourism and transport, trade, spatial development and the local embeddedness of large firms.

As a further organisational innovation, the annual meeting was terminated by a Hungarian-language plenary session led by *János Rechnitzer*, professor of Széchenyi István University.

Imre Varga, associate professor of Eötvös Loránd University and professor *Dávid Lóránt*, general secretary of the Hungarian Geographical Society presented the results of their research on spatial processes in Western Hungarian regional labour markets. The lecture based on statistical data analysis presented intra-regional disparities of labour markets (employment, wages, commuting) at the level of counties as well as employment-related outmigration tendencies stemming from various geographical location producing labor shortage in multiple sectors in various parts of the region.

Imre Lengyel, professor of the University of Szeged and *Attila Varga,* professor of the University of Pécs and vice president of HRSA examined the role of geography in economic growth in Hungary. They outlined economic growth tendencies of the country and distinct

counties (centre, FDI manufacturing, reindustrialised, knowledge centre, rural) and the spatiality of the main factors of growth. According to the presentation, sluggish economic growth is not primarily due to large spatial inequalities in various factors but rather the inefficient allocation and utilisation of resources. The concentration of resources leads to higher agglomeration benefits, bolstering national growth as well. The main problem is that the excessive concentration of resources in the centre and the main university knowledge centres does not contribute to national growth. This problem and its root causes as highlighted by the results of the analysis performed by the lecturers raised several questions and dilemmas discussed in the framework of a debate session under the leadership of János Péter Kiss (ELTE), Gábor Lux (HAS CERS Institute for Regional Studies) and Ernő Molnár (Debrecen University), moderated by Erika Nagy (HAS CERS Institute for Regional Studies).

The official granting of the awards established by the HRSA took place during the closing event of the two-day annual meeting. The Pro Regional Science Award was granted by the univocal decision of the general meeting to János Rechnitzer, professor of Széchenyi István University, head of the Doctoral School of Regional and Economic Sciences, scientific advisor of HAS CERS Institute for Regional Studies, honorary president of HRSA, for his outstanding organisational, scientific and educational work in the domain of regional science. The Association announced the call for proposals of the Outstanding Young Regionalist Award for the tenth time, which was granted by the HRSA Presidency and heads of the 13 HRSA Regional Sections to Katalin Lipták, associate professor and head of department of the Institute of World and Regional Economics of the Faculty of Business and Economics of the University of Miskolc, recognizing her valuable educational, organisational and public activities in regional science.

The parallel sessions and chairs were the following:

- Theoretical and methodological questions of spatial analysis (Chair: Ákos Jakobi assistant professor, Eötvös Loránd University)
- Innovation, knowledge and networks (Chair: Balázs Lengyel senior research fellow, HAS CERS Institute of Economics)
- Cities today and tomorrow. Development models of cities in Hungary (Chair: János Rechnitzer professor, Széchenyi István University)
- Central and Eastern European regions on crossroads (Chair: Zoltán Gál professor, president of HRSA)
- Differentiating urban network: shrinking small and medium sized cities in Hungary. (Chair: Bálint Koós research fellow, HAS CERS Institute for Regional Studies)
- Cluster-based digital information systems in urban context (Chair: Tamás Gyulai, AI3PA Smart Cluster)

- Rural spatial processes and environmental problems (Chair: Bálint Csatári emeritus researcher, HAS CERS Institute for Regional Studies)
- Decisions and processes in the economic field I. (Chair: Zita Finta chancellor, John von Neumann University)
- Tourism and transportation (Chair: Melinda Jászberényi associate professor, Corvinus University of Budapest)
- Spatial questions and answers from regional/territorial development (Chair: László Faragó scientific advisor, HAS CERS Institute for Regional Studies)
- Social flows in spatial context (Chair: Viktória Szirmai professor, Kodolányi János University, HAS CSS Institute of Sociology)
- Spatial processes in the commerce and marketing (Chair: András Kovács associate professor, Budapest Business School University of Applied Sciences)
- Creative and cultural economy (Chair: Éva Judit Gajzágó associate professor, Tomori Pál College)
- Companies and host environments – Tendencies, actors and examples of corporate embeddedness (Chair: Viktória Józsa CEO, Nord Consult Plc.)
- Borders and flows (Chair: Zoltán Hajdú scientific advisor, HAS CERS Institute for Regional Studies)
- Decisions and processes in the economic field II. (Chair: József Kárpáti head of Southern Great Plain Section of HRSA)

Further information on the annual meeting are available on the webpage of the Association: http://www.mrtt.hu/.

NEW RETAIL MODELS IN ONLINE AND OFFLINE SPACE

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Abstract

Our paper focuses on spatial and strategic questions in the field of retailing; thus, we approach the novel trends of retail trade from two directions: regional science approach and retail management\marketing consideration will be applied.
In the first part of the paper space-related retail problems will be introduced. The "retail landscape" has dramatically changed in the last 2-3 decades. Here we will focus on new spaces and omnichannel marketing models. In this part the interrelations between spaces and retailing will be put in the focus.
In the second part, built on the key findings of the previous chapter, we give an overview on space and disruptive technology influenced business models: we point out, how "spatial revolution" lead to changes in distribution, customer behavior, site optimization, and finally cause transformations in strategies of retailers.
In the third part – after giving an overview on new spatial trends and models – we focus on new distributional and robot technology-related spatial questions in retail trade, that we call here "smart retailing".
In the paper more important characteristics and changes of the "retail-space problem set" are highlighted and discussed. The article may contribute to a deeper understanding of spatial business and technology influenced strategies in the field of retail trade.

Keywords: space, strategy, retail, smart retailing

INTRODUCTION

For organizations – based on the traditional approach – the external business environmental factors include for example the government and other legislation, the macroeconomic trends and the changes in social structures. The fourth industrial revolution produced so-called disruptive technological changes affecting on environmental stresses that determine the operation of most of the companies (Schwab, 2017). The disruptive corporate factors basically include such internet-based technologies that are not just fundamentally altering the traditional business models but creating new markets too (cyberspace). These effects cannot be neglected because they require new approaches and methods from business planning to management control. In the case of a trade company the data and information related to the sold product, and the appearance of new distribution channels get bigger and bigger role in value creation, and in

customer decisions the quickness and transparency, and the increased amount of available options are the most appreciated.

In the case of a trade company a geographically more or less distinct catchment area served as the most important dimension of customer segmentation even 5-10 years ago. The omni-channel distribution channel model requires another kind of stakeholder management. The internet created the category of so-called trait-based community (Ismail, 2014). The geographical proximity is being revaluated, the customers are in the "cloud", communicating in a virtual community (Nagy, 2017). Consequently, reaching the potential customers, understanding and serving their needs require new approach to space and market, new methods and algorithms.

The goal of our study, considering the above mentioned fundamental changes of the market, to show those changes of analysis, strategy, technology and approach to space that result in success for a trade company among the altered market circumstances in the third decade of the 21st century. During our research we relied on the domestic and international literature as well as on the results of our previous researches. In our present study we focus on presenting the changes in the market(spaces), and on the effects of these changes on the strategical and technological solutions.

In our study we map the paradigm shifts influencing the spatial thinking and operation of corporate management due to the rise of disruptive technologies. The mostly technology-driven change in production models altering the business models of companies fundamentally is called disruptive – that is, destructive and creative in the same time – innovation.

Today most of the retail companies can be characterized by a strongly planning-driven way of thinking and style of management fundamentally based on the current processes. This arose from the strong concentration of the industry – typically in the last 20-25 years – that frequently limited or slowed the market entry and development of small sized businesses. However, the new shapes and channels of retail trade gradually demand the management greater flexibility, faster adaptation and continuous analyzation of the markets. In this study we summarize these challenges to help the members of this industry to ask the right questions, to build proper business models, and to understand better the changing term of spatiality.

NEW SPACES AND MARKETS IN RETAIL TRADE

Before we address the changes in retail business models and the related business practices and technological solutions, it is important to explain the (r)evolution of the features of the markets

determining the business processes. In our theoretical conceptualization several different space-approaches will be introduced deliberately (positivist and relationist considerations too) because – in our view – to achieve successful retail strategies, diverse space-approaches are needed. Besides classic physical space approaches, network-like spaces and subjective space-narratives must also be considered.

The above mentioned technological changes, the economic, social and technological processes of globalization placed the concept and domains of market in radically new context. The concept of market in economics was always somehow abstract (Dusek, 2013), but by today– due to the technological revolution – it became more detached from geographical spaces on the one hand, and it became much more a part of it on the other hand.

Good examples of the "relative spatial independence" of retail trade are the global online retailers making their selection available almost worldwide (e.g.: Wish, AliExpress, eBay, etc.). Good examples of spatial dependence are business solutions that communicate, attract and keep customers by geolocation as an important point of their business and marketing strategy. Today a lot of retailers use in-store customer location solutions that are also important tools for improved customer experience.

Based on these it is important to clarify the concept of space and the features of spatiality, because this constitutes the framework of the potentially successful retailer strategy.

Following the train of thoughts of József Nemes Nagy (Nemes Nagy, 2009), space can be organized into five categories which are presented, characterized and illustrated by visual and possibly retail-related examples. From the more tangible and material to the more abstract levels these five categories are as follows:

1. Outer spaces (absolutist, "container-like" space)
2. Inner spaces (relationist, contact space)
3. Sensed and experienced spaces (constructivist approach to space, with subjective spatial perception)
4. Virtual spaces (online space structures, networks)
5. Hybrid spaces

The evolution of the concept and possible interpretations of space had come a long was till today. As József Benedek points out in his considerable summarizing essay, the concept of absolutist ("container-like") space and the concept of relationist ("structured" by the relationships of things existing side by side) was already present in the 16th century and evolving to date (Benedek, 2002). The theory of subjective spatial perception and interpretations is much younger, appeared only in the 70s years of the last century. The research

on virtual spaces is only as old as the more widespread access to the internet (starts from the 90s) (Fuchs, 2014).

In outer spaces, namely in the geographical space sensed and well known by us we can observe and describe the spatial processes and structures of various social and economic events. These spatial events have several business and marketing aspects on the level of the inner operation of the companies as well as in micro and macro environment of the companies.

The companies basically operate in the geographical (physical) space, so the geographical spread of the store network (in the case of the traditional "brick and mortar" stores), the geographical spread of the income, the location of the customers – for example by residence or workplace –, etc. are all information with a dimension of space connected to the inner operation of the companies, and so they can be analyzed by spatial aspects.

Most of the micro and macro environmental factors influencing the operation and business success of the companies have important spatial relations, thus they also have a potential to be analyzed by location. The geographical location (vicinity) of the competitors, business partners and customers has crucial importance regarding the success of a company. Too much or too few competitors in the vicinity, or insufficient local demand generated by customers may seriously endanger the profit goals of a company. Like the micro environmental factors, then certain spatial aspects of the macro environmental background may have serious influence on the business success. In addition to several other factors the spatial features of the demographical processes (e.g.: the direction of the movement of population), the differences in the income level of the residents (e.g.: there are "richer" and "poorer" districts of a city), the spatial separation of the economic growth (compare the development of Budapest and Northwestern Transdanubia with the economic backwardness of other regions), and the features of the settlements (e.g.: tiny hamlets in Southern Baranya compared with the towns of the Great Plain) all have significant spatial influences. To understand the environmental factors of a company better the above mentioned and other economic and social events are required to be analyzed and evaluated also by the aspect of spatiality. The methodological characteristics of this are discussed later in details.

The examination of inner or network spaces follows. While we talked about "container-like" space in the case of outer (geographical) spaces with examined things taking defined (describable by coordinates) places, the inner spaces are much more about relationships and interactions than about actual geographical locations.

The inner spaces take form in various contact networks between persons or companies in which the existence, strength/weakness, direction/disorientation of the relationships are more

determinant then the actual "geographical location" where these relationships take place. In the inner spaces the topology of the contact networks (the amount, spread and degree of hubs, the amount of contacts, and the distance of the participants) is dominant. These spaces of relationships and their aspects can be analyzed mathematically (e.g.: by graph theory models). In trade strategy these relationship spaces can be analyzed for the value chains of trade companies and their suppliers or for the seller-consumer networks as well as for the relationship between an opinion leader or influencer and the customers in company marketing communication (see for example the online communication of Spar and the significance of influencers like Nóra Ördög and Tamás Trunk).

Outer and inner spaces can be considered as objective things the features of thereof are independent of the observer. By contrast, the regional scientific (Faragó, 2013) or sociological (Berger, 2013) approach to the postmodern concept of space can be grasped as the existence of "constructed" spaces that are dependent of the observer. So, there is not just "one space" but several interpretations of space depending on the observer, and the members of a society are not just sensing space but actively contributing to its "creation". This means that in different ages and societies, people create institutions – which is the structuration with the word of Giddens –, resulting in the creation and shaping of the relationships they live in. This process takes place in space, and not in just the "outer" space and time but in our "constructed" space as well. So, we contribute to the creation, sustenance and termination of spaces: the space influences us, and we have influence on the space too. The examination of meeting nodes, daily (traveling) routines, segmentation of activities in time and space, and accessibility of various social groups is an important starting point not just for sociology but for business sciences (marketing) too. In trade, the concept of subjective spaces is a good explanation for the individual courses of the customers inside the stores and supermarkets. These mental space models are responding to the individual interests and interpretations, and determining what paths a customer moves on in a supermarket, how much time they spend there and what they remember from their visit. In the Hungarian literature, while studying environmental psychology in supermarkets Dúll and his co-author pointed out that the inner spaces are sensed and used subjectively. They described the spaces of supermarkets as "strictly regulated common space", "regulated freedom", "controlled coziness", etc. (Dúll & Demetrovics, 2009), sketching the varied and person-related use of these large area marketing centers.

These studies on subjective space concepts and interpretations point out that for a trade and service provider company the important things are not just the objective location and appearance (size, location) of space itself (as sales area, public space, etc.) but the subjective

experience of space as well, because they can help or limit the marketing and sales, thereby also the business success of the company.

The variety of virtual (cyber) spaces is not just defined by the amount of virtual spaces where we may express ourselves (by browsing, blogging, using social media…) but also by the different "virtual level" of these spaces, and there are several distinguishable steps between reality (physical space) and total virtuality (conceptual spaces) (Ákos, 2007):

a. Real space
b. Network space
c. Web space
d. Virtual world(s)

While real space means the three-dimensional world around us, the network space is a network created by information systems (network cables, servers, users, etc.), that is the infrastructure of Internet. This space is located in the geographical space but it is operated by its own network rules.

Web space means the various webpages, blogs, community sites and other contents, including the space of hyperlink-based connections between us. This has its own contact network infrastructure.

The virtual worlds are programmed "3D realities" with the main purpose of projecting real space or its elements by information technology. Its goals include entertainment, modelling, planning, marketing, etc.

It is important to see that each interpretation of the virtual spaces has more or less strong contact with the geographical (physical) space (Mészáros, 2003; Kovács 2013). Networks are mapped in geographical space, so web space contents and the users themselves can be found in the geographical space, and their habitat in geographical space (where they connect to the web space) at least partially influences their behavior on the web. There are real users behind the avatars in various virtual worlds, there are real geographical spaces behind the themes of virtual worlds, and there are well-articulated needs of real people behind the dedicated 3D software. Though Second Life and other mainly public-targeted virtual realities (There, Active Worlds) are solutions with limited business success (especially compared to the social media tech companies), unbelievably big perspectives opened for the business use of 3D realities in the last two decades. The various three-dimensional urban planning and simulation software (for regulating traffic, emergency response goals, modeling wind-flow, etc.), 3D CAD and CAM software for design and production, medical software and 3D military applications are all opening new horizons in the work on several fields. Today, the marketing and trade application

of these software has significant effect on company strategy. Product visualization based on virtual realities may greatly increase the sales, especially in the case of valuable (e.g.: cars) and multi-component (e.g.: furnishing, bathroom and kitchen design) products. In these areas the car dealers, bathroom tile and sanitary traders, furnishing enterprises use virtual reality software to support (ease) the purchasing choices made by the customers. A car, a fully furnished living room or bathroom simulated in virtual space can be "walked and viewed" before the customer makes their choice to decrease the customer's uncertainty and increase the efficacy of the sales work of the company. For example, building an apartment in 3D virtual reality means that during the design it is possible to plan everything to the finest details, and not just the dimensions and arrangement of rooms but the color of the walls, the locations and shapes of furniture, and this greatly supports the sales and marketing communication processes.

And this leads to the question of connections between physical and virtual spaces. As mentioned above in relation with virtual spaces, every virtual space (be it the created environment of *Second Life* or the digital design of a flat) is in connection with the "real" geographical space, because it takes inspiration from the latter to be a plan of a (sometimes not even existing) house that is realized later. The question is how the virtual and geographical realities are connected, separated and creating spaces with new qualities that include the virtual and geographical dimensions as well?

Ákos wrote about such so-called hybrid spaces by presenting "smart" spaces. These are, for example, smart homes in which the floor, doors and windows, and the digital devices of a flat (as a geographical space) are equipped with sensors that are continuously monitoring their environment, and by sending data into the digital space they are optimizing the parameters of the geographical space, namely the flat (Ákos, 2007, p76). By thinking about this concept of hybrid space we created a process-centered approach. Basically, it means that the hybrid spaces are *sui generis* existent, and come to being temporarily by the process of one or more repetitive social or economic act when the elements (objects) or sections of this act appear in the cyberspace and/or geographical space.

To use a marketing-related example, an online purchase creates a hybrid space when the buyer gives a geographical location (address) for the delivery of the ordered product. The selection and purchasing of the product happens in digital space, but they deliver it in physical, geographical space, and the whole process includes several connections between the digital and geographical spaces. A cosmetologist may offer services online by contacting their customers (by Facebook and/or email), but service-providing itself happens in geographical space (in the

shop), while aftersales activity (for example, a customer satisfaction survey) may take place on the Internet again.

Online fresh food trade also creates interesting hybrid spaces. Although geographical distances are generally less significant in online trade, the transportability and shelf life of fresh food causes such surcharges (e.g.: refrigerator trucks) that leads to significant geographical limits – because of this a hybrid space is constructed with strong geographical projection and online connection in the same time. On the webpage of a domestic online food seller, G'Roby we can find a list of (Budapest agglomeration) settlements where G'Roby online offers fresh food delivery service. The 29 settlements targeted by G'Roby are Budapest and its agglomeration, but the service is not continuous geographically (see the example of Gödöllő below). Supposedly the vicinity and time-distance of the selected settlements, the frequency of orders by the local size of the market, and the value of orders by settlement together determined the serviceable area. For example, the population and the aggregated income of the residents of Gödöllő together meant a favorable business opportunity for G'Roby, but the company did not extend this to the nearby settlements (e.g.: Veresegyház, Mogyoród, Kerepes).

A special case of hybrid spaces is the augmented reality (AR) that is various visual, auditory and audio-visual information connected to a point (or area) of the geographical space by software applications running on typically a portable IT-device (smartphone, tablet). Studying the augmented reality is desirable, because there is great business and marketing potential in it. For example, IKEA's mobile AR application gives an opportunity to the users to "install" IKEA furniture virtually into their real home-environment, so they can see how the selected furniture looks like on a given place, what size it has, does its color fit into the environment, etc. By this application IKEA offers an innovative solution for the many decades old problem that in the store most customers cannot precisely evaluate the features of the selected furniture. Customer choice based on inappropriate evaluation can easily lead to dissatisfaction that is unfavorable for both the customer and the company. IKEA decreases this uncertainty by its augmented reality application.

However, the application of augmented reality has innumerable business opportunities including those mentioned below in order to point out the features and adaptability of this software solution:

- Several fashion stores use AR-based solutions to speed up the extended fittings. The core of the technology is a big touch screen (e.g.: Microsoft Surface), a webcam, and an appropriate software. The customers select the clothes they want to try on the touch screen,

then standing in front of the device the system scans their image and fits the selected clothes on their "mirror image" projected on the screen.

- Some Drogerie Markt stores offer an opportunity to "try" the selected colored lipstick and mascara by an augmented reality application at the L'Oréal decorative cosmetics stand. This is carried out by a webcam and a tablet installed into the stand. Standing in front of the stand the customers select the desirable color on the touch screen of the tablet, then the cam projects their "mirror image" onto the screen with the selected colors on their lips and eyelashes.
- There are numerous other areas where augmented reality can be used: for projecting prices onto the goods in shop windows, for increasing the customer experience, for supporting the movements of the customers in large store units, etc.
- Besides the widespread industrial and B2B applications AR-based solutions appeared in culture too. Some museums increase the experience and help their visitors in orientation by descriptions, photos and videos related to the exhibited articles.

All in all, we can see a new "space revolution" today, in which not just the professionals of spatial sciences but marketing and trade people also required to get to know such new terms and devices as virtual reality, subjective space perception and interpretation, or augmented reality "merging" the geographical and cyber spaces into each other.

Continuing our study, we review and estimate the impact of these phenomena on business strategy. We want to point out here how business strategies are influenced by the more and more complex space-approaches. We will highlight where space-related business strategies can be found in the framework of the company strategy (e. g. logistics, delivery, etc.)

BUSINESS MODELS IN TRADE

The question arises that what role spatiality gets in a business model and development philosophy adapting to the quickly changing environment, and how much stability it represents in respect of making decisions. In the traditional business model – for example during the preparations for a store opening – the catchment area gave a stable starting point for planning the sales potential. If we test our product or service continuously, and are ready to change our business model based on the feedback from the clients, then spatiality can be a changing factor in occasional re-planning if the geographical location of the operation of the enterprise is important. In the case of a strongly innovation-driven enterprise the clients – in many instances – cannot phrase their needs clearly, so the management emphasizes the testing of value-

generation related hypotheses instead of the traditional market surveys. This approach applies also to the area segmentation of the customers, because there is no determined catchment area in the long term. Besides the continuous testing the role of traditional research and survey is taken over by algorithms (Salim, 2014), and it is not enough to know where are the clients but it is also important to estimate where they will be, and where will the potential customers come in the future.

Today, lot of sales managers may feel that we are witnesses to changes that are not just modifying the well-known operation models but also fundamentally rewriting the terms of spatiality. There is great fear from online trade, but in the last one or two years, significant players of the traditional sales channel oved toward the so-called omni-channel operation model. Innovation and facing the challenges of technology-based development suppose the existence and improvement of four critical abilities in retail trade: the right product must be delivered to the customer at the right place, in the right time and on the right price (Christensen & Tedlow, 2000). From these criteria perhaps the definition of the right place is the greatest challenge in this environment influenced by so-called disruptive innovations.

Changing business models

As a consequence of the digital "revolution" the boundaries between the physical and digital worlds got more and more blurred, and it had radical effects on the operation model of traders too. Although with time business models always changed gradually but such a quick and extensive change was unprecedented, and today there is no entrepreneur who could opt themselves out of the effects. The convergence of such business models as, for example, the mobile "telephony", cloud economy, or the so-called Big Data analytics sped up the pace of the changes. This can be well seen in the example that while in the last century the companies of the Fortune 500 needed averagely 20 years to reach 1 billion dollars' equity market capitalization, for example YouTube needed less than 18 months, and Uber made its business value ten times larger during 2 years (Ismail, 2014).

For some companies, digital reform creates confusion, and they feel like being in a dark room. However, others see unequalled business opportunities in it. The digital development's usefulness for a company, and the required changes in its business model are depend on the company's actual phase of growing (Deloitte, 2017). For companies in a startup phase digitalization gives opportunities for innovative business models, and the introduction of new products and services. For the established enterprises the digitalization may help to strengthen

the loyalty of its existing customer base, and to get new customers. By digitalization, older businesses may overcome the dangers of the slowing pace of development, and introduce new systems making them more effective. The management's ability to recognize and use the advantages of digitalization can be a strategic resource for the extension of the company's life cycle.

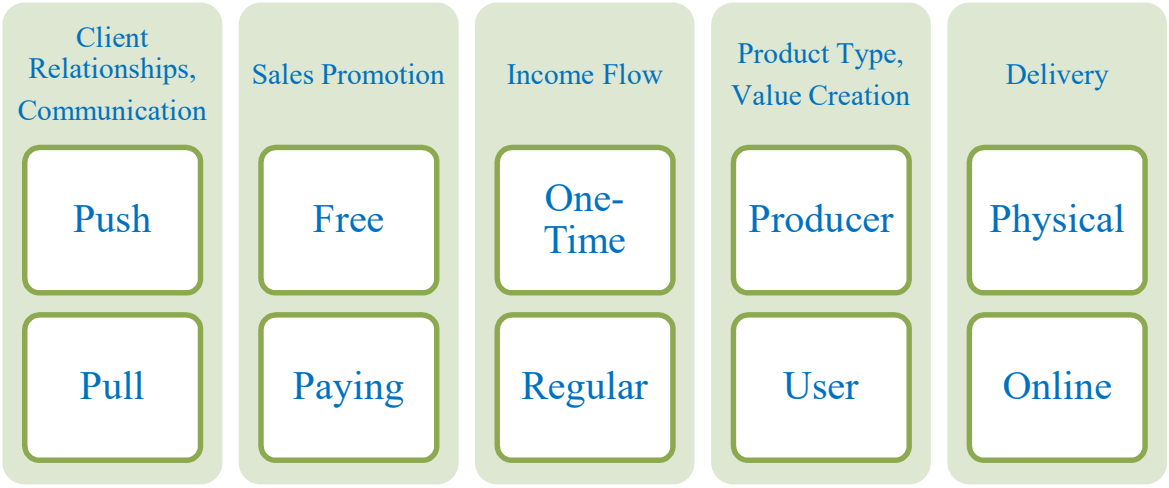
Currently our world witnesses an explosive change of relationships, data and innovations, and while the world of IoT and hyperconnectivity changed the market forces, the sources of advantages and the rules are in fact determined by the customers by requiring personalized, simple and seamless experience at every point of contact (Kozák & Neszmélyi, 2018).

More and more players use digital community spaces to offer their services, share their experiences and intuition, and for trade as well. This all results in the opening of new communication channels toward the customers, and new ways of the better use of sources appear. To utilize these opportunities, traders need to improve not just the monitoring of the market, the Big Data analytics, and the use of social media, but they have to renew their business in a way to make it compatible with the growing digital world and its customers. These so-called interface applications made a whole new technology to rise, because the communication with the clients and the management of the processes in the company currently happens on integrated, uniform platforms (Palao, Lapierre, & Ismail, 2018). The integrated data handling, the exceptional growth of information and the appearance of new types of business and market algorithms in company management, market analysis and demand forecasting provided free space for the spread of artificial intelligence. This also results in the replacement of routine-like, repetitive human labor by automatization, as we can see numerous examples in logistics, for example, and the movement of goods within it.

The change and the direction of changes in the elements of business models shown in Fig. 1 are good indications of the complexity of this change in trade. Perhaps the biggest change happened in the communication with the clients. Traditional advertisements are more and more replaced by social media and browser-based solutions. The customers initiate the contact, research and collect data, and – in the trader's point of view – the effectiveness of this activity can be deducted from the so-called conversion rates. The palette of sales promotion and persuasion became exceptionally rich. From simple buying and selling to free use there are several ways of persuading the customer. This is related to the method of getting the price of the purchase, the scale being from instant payment through preorder to free use (freemium). Determining value creation is also more nuanced, because the product or service is identified not just by needs or form of appearance, but there is a new aspect of who takes part in the

development or content creation. The coordinated delivery of the goods through different sales channels created the concept of omni-channel, in which traditional stores and online platforms form a single selling space (Croll & Yoskovitz, 2013).

Figure 1 Elements of the E-commerce Business Model



Source: own edition

Companies comfortable in the digital world may compete in the market between more flexible organizational limits, with lesser fixed costs and different customer relationship strategy. The sources of growth moved from the traditional resource-heavy development of infrastructure to the demand-driven market expansion. The concepts of virus marketing, oral tradition and involvement are the new ultimate weapons of marketing strategy creators. Financial planners have to befriend with terms like Click Through Rate and rate of basket abandonment. In the next chapters we describe what this all mean in the daily routine of trade companies comfortable in the digital world. The following, practice-oriented part of our paper will give a short overview on space-related retail business solutions. We will introduce several examples where geographical space, virtual spaces and hybrid spaces (e. g. AR-based solutions) are in use in daily retail operation.

SMART RETAILING

Retail trade integrates new technological solutions quickly, so it is a good area for linking and networking intelligent systems together. Today costumers have new expectations of retail trade, and this new situation forces both the customer and the seller to rethink the processes of buying and selling – the customer decides how, when, from where and from who they buy, and the seller have to know what, when and where they should offer (Wrigley & Lowe, 2014). The change in production technology, the spread of pre-packaging, the increase in commercial

traffic and purchase quantities, the mushroom-like growth of brands and ranges of goods, the widening and deepening of the competition urge trade entrepreneurs to progress together with the new requirements, participate in the sales revolution and create tool systems that are needed for this. The sales revolution arrived to a new phase in the first trimester of the 21st century and it requires more adaptation from the bigger and bigger super- and hypermarkets than the specialty shops and local stores appeared at the dawn of mass production. The new environment of the digital era comes with a paradigm shift not just in the *stricto sensu* marketing, innovation and trade but in the conditions of the competition too. The key factor of change is the customer (Morrison, 2012) who has interactive devices with no limits of making contacts with anyone who can help or influence their decisions, and the seller is only one possible participant in this. This circumstance makes the market position of entrepreneurs uncertain. In the digital age the customer may require personal service, the freedom of selection makes the customer independent of the producers, and the bigger range of goods with the concentration of specialty shops installed adjacent of each other and the variety of service providers make it possible that shopping becomes pleasure instead of pressure.[1]

Retail trade always reacted quickly to the changes and technological advance of any given age. In the last decade numerous technological innovations appeared in retail trade: barcode readers, QR codes, touch screen information or pricing, radio frequency identification devices (RFID), robots and cellphone applications are more and more widely used. Besides these innovations the financial and economic depression in 2008 forced the companies to change direction. Consequently, stores and supermarkets in traditional space had to move toward eCommerce, and besides the geographical space they started to sell in the cyberspace too. By the ideas of György Enyedi we may say that the future attention of marketing geography should turn toward the contact points of geographical space and cyberspace, so the online and offline world became equally interesting, because sales processes are realized partly in geographical space, and partly in cyberspace.[2] In the future we shall follow the sales processes happening in the hybrid space.

One of the pioneer users of smart technologies is the retail trade that today has the same significant influence on city development processes as markets, agoras and fairgrounds had in the past when cities emerged from towns. The smart retailing is a part of a wider sense of smart

[1] Sikos T. Tamás – Hoffmann Istvánné (2004): A *fogyasztás új katedrálisai.* Stratégiai Tanulmányok Sorozat, Budapest, MTA Társadalomkutató Központ.
[2] *Magánbeszélgetés Enyedi Györggyel.* Juszt László's interview, 10th of October, 2008. MTV2

city concept. By this approach the basic idea is that smart technologies make the quality of life better.

Smart Retailing Technologies

The dynamically changing retail trade offers numerous opportunities to use modern technology. These new options require the review of the earlier sales system, and enforce the development of such new organizational systems that are able to adapt to the changing conditions of retail trade. These changes affect not just on sales but the customers also must adapt to the new technologies. The world of robotics creates a whole new system of tools and devices for trade. In this system both sides have to relearn the process of purchasing, its dynamics, appearance, locality, operation concepts, online and offline features. Below we would like to present some examples for intelligent tools in retail trade:

- The Czech Alza IT-retailer opened an "unmanned" "Alza Concept Store" in Prague in Flora metro station where shoppers can buy their items 24/7 a week in total privacy[3].
- In several Hungarian dm (Drogerie Markt) drugstores there are "smart make-up stands" with AR (augmented reality) extension. The shoppers can "try on" the color of lipstick on their lips and make-up colors on their face with the help of a camera and a display.
- Similar face recognition system, for example, helps to keep certain persons away from the trade centers, and gives information on the amount, age and satisfaction of visitors.
- 3D applications are used on a lot of areas. The best known such application is the *iCanDesign* from IKEA that enables us to furnish our home or office virtually with IKEA furniture by using the data of the geographical space, namely the dimensions of the room in the design process. It ensures the most optimal arrangement of furniture in our home or office, and even a later redesign is much easier this way.
- Tesco in South-Corea introduced "virtual shops" in metro stations where passengers can organize their diary shoppings (Petit de Meurville, Pham, & Trine, 2015).
- The *Style My Hair* hairstyle application is also new in 3D design. The artificial intelligence based innovation of L'Oréal Professionnel enables "real-time" hair color changes besides the recognition of hairstyle type by form.
- The use of smart robots is more and more frequent in warehouse systems, for example at Amazon.[4] These robots make commission more effective because people do not have to go

[3] https://m.alzashop.com/alzacz-opens-a-self-service-shop-of-the-future-in-prague (date of download 08/10/2019)

[4] *A polcok mennek az emberekhez az Amazon okosraktárában* (2014). Source:

for the goods but the robots take the shelves and products to the customers, and this makes the operating of the logistics system more effective. This new system is not just faster and more cost effective but it requires only third of the human workforce that traditional logistics needs, and this significantly increases the market competitiveness of the companies. The BingoBox builds on the "strategic alliance" of Alibaba and Auchan, and "it reflects the future image of »New Retail«".[5] Basically, this is an online and offline sales system that operates in a container house under remote control (purchasing, monitoring, inventory management, etc.), and the sales take place in local space (Amazon Go operates with a similar system), human workforce needed only for remote monitoring and restocking. Customers of BingoBox are registered customers with loyalty card used as identification document for entering. They pay through express checkout, and the surveillance is performed by camera systems. This means a costumer may leave the BingoBox only with products they paid for, because in case of theft the camera system alerts the remote supervision and blocks the doors. Using the BingoBox offers a solution for an old site selection question too, because the superstructure can be moved easily, so in case of bad site selection it is suitable for a flexible relocation to a better place.

- "Virtual walls" in metro stations or at any other traffic hub offer significant help for the customers to use their shopping time optimally. Products appearing on the virtual boards can be easily purchased and ordered by a QR (Quick Response) code mobile phone application (e.g.: touch screen apps in Dubai or QR code apps in South Korea). The application enables changes in the quantity of ordered goods, and the customer may pay by cellphone, and gives the shipping address and time electronically. In the background the logistics is done partly by robots, and partly ensured by the traditional delivery system. This new kind of sales strategy helps commuters to use their time effectively.
- Drones offer new opportunities in smart retailing, in the delivery of urgent and sensitive products, and in inventory management. By using drones stock can be counted quickly and easily.
- The technology of 3D printing contains the future opportunity of buying a product and printing it immediately after the purchase.

http://smart.blog.hu/2014/05-/14/a_polcok_mennek_az_emberekhez_az_amazon_okosraktaraban (date of download: 07/01/2018).

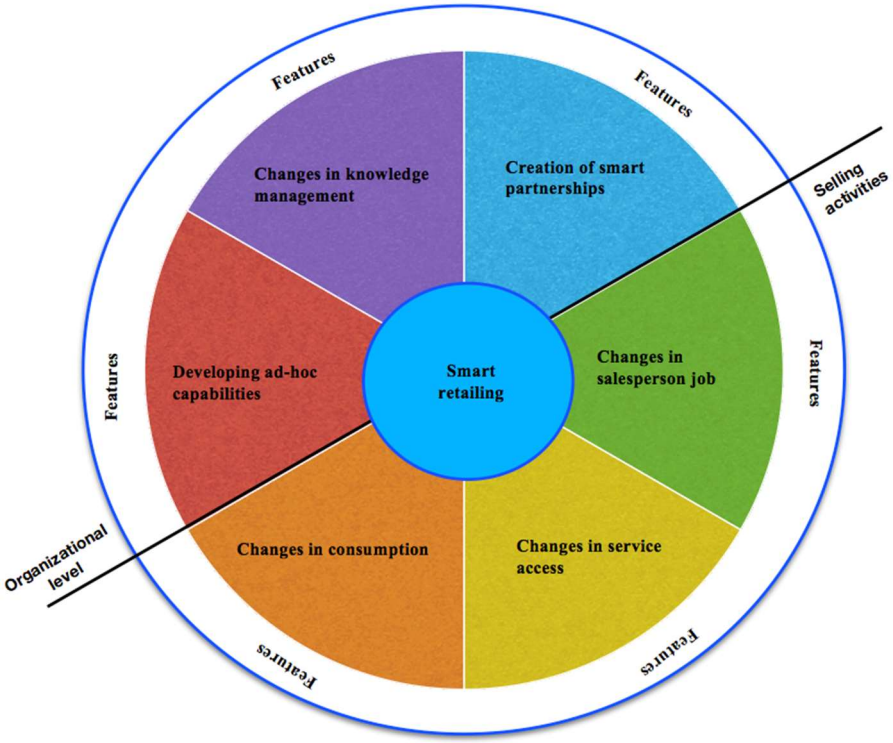
[5] *Az Alibaba és az Auchan együtt tarolnak Kínában* (2017). Source: www.origo.hu/gazdasag/20171121-azalibaba-es-az-auchan-kozos-erovel-hoditja-meg-a-kinai-piacot.html (date of download: 07/01/2018).

Thus robotisation, especially the use of self-taught robots gains more and more important role in online and offline retail trade. As an evidence to this, robots were the stars of the Consumer Electronics Show (CES) in Las Vegas, 2018. Even earlier the usage of robots was significant for example in logistics, but last year robots can work as shopping assistants in trade centers. Shopping assistant robots (Shopping Cart Robot) are able to read barcodes and tell the customer the exact price of the goods, and even the exact instore location of a good selected in a mobile application by the customer, speeding up the process of shopping, and making it a special experience.

Towards a smart retailing business model

In smart retailing continuously appearing new cybertechnology makes the regular review of the whole shopping process necessary. In this new system the seller's and the customer's relationship with the process and technology of shopping is changing. (*See* Fig. 2.)

Figure 2 Elements of Smart Retailing



Source: Pantano & Timmermans, 2014, 104. Consumer Electronics Show; www.cnet.com/ces/ (date of download: 07/01/2018)

The main elements of smart retailing are: (1) Ability to react quickly on organizational side; (2) changes in Knowledge Management; (3) contact with the smart partners; (4) changes in the work of the seller on the sales side of the company; (5) access to services; (6) changes in consumption.[6]

Companies participating in smart retailing have to monitor the needs of the market continuously and must adapt to these needs quickly, and in the same time they are required to integrate the new technological solutions into their sales system. Meeting this requirement is the basic condition for companies using smart technologies to keep their competitiveness. The ability to react quickly is a must for these companies on organizational level and in technological development alike.

In smart retailing information are continuously exchanged between the companies and the customers. The important questions are: How to relay the updated information to the customers on a given product, and how to collect the customer experience about the products. It must be assessed how to clarify the most valuable information from the existing and growing data bases (Big Data). To solve this successfully we shall pursue the development of an analyzing and filtering system that highlights only the most important information, and for this the expertise of the management handling the process is very important. New technologies in the sales system, for example the utilization of robots requires an entirely new knowledge from the seller, but even the use of shopping assistants (Shopping Cart Robots) affects the shopping process and requires a higher level of expertise from the management. Briefly: intelligent technologies need "smart management".

The companies also have to make their partnerships progressive cooperation. This means that, for example, traditional retail companies shall agree to an alliance with partners already adapted to the technical conditions of eCommerce. The cooperation of Alibaba and Auchan, or the alliance of Walmart and Google are good examples.[7] In smart retailing the job of the seller also changes, because the seller is expected to have a more multi-faceted knowledge than in the traditional form of retailing. The seller has to know the details of the operation of the new technology, because they can effectively help the customer only by this knowledge. In the same time, it is also a fact that the utilization of new technologies consequently leads to a decreased

[6] Based on Pantano és Timmermans. Eleonora Pantano – Harry Timmermans (2014): What is smart for retailing? *Procedia Environmental Sciences,* Vol. 22. 101–107.

[7] The alliance of Walmart and Google is mainly against Amazon, because they would like to challenge Amazon's market leadership. Google pursued this goal for a time now with its services Google Shopping and Google Express, but it could not achieve being a real competitor to Amazon. Now Google has an opportunity to change this by its partnership with Walmart regarded as a market giant in traditional trade.

need of human workforce, because the sales process becomes more and more robotized (for example, the logistics of Amazon is fully robotized).

The change in purchasing points (geographical space, cyberspace) results in new challenges in the utilization of smart technologies. Traditional trade happens in geographic space while the place of eCommerce is in the virtual space. This new situation not just affects the sales process, but it requires new conditions in the case of certain services, including a wide spectrum of banking services in the virtual space. The new form of sales demands that the services shall fit to the appearance of new technologies, thus the organizations have to develop newer and newer smart service systems, and in the same time sales in the virtual space changes the behavior of both the seller and the customer.

In the smart retailing system both the process and structure of purchasing are changed. The existence of new technologies affects to the buying process, because the customer is not there in the geographical space in the traditional sense – purchasing goods in the cyberspace drastically changes the behavior of the customer and the shopping experience. In the classic purchasing process, the customer seeks, compares, selects and buys the product. In many cases impulse buying prevails, but in the cyberspace purchasing is a more conscious process because the customer is bound by no geographical space or time. Consequently, the new sales system may meet the requirements only if there is a new service network in the background that offers modern services and utilizes robot technology. *Thus smart retailing is nothing else than an innovative sales strategy approach and tool system using modern retailing technologies, in which market players are continuously renewing themselves and learning the utilization of new technologies. The world of robotics wholly permeates this new system.* In smart retailing the companies' response to the challenges of the market is exceptionally quick, and they cooperate with "smart partners" in order to keep their competitiveness. Thus the customers may benefit from more comfortable shopping experiences.

CONCLUSION

The aim of our paper was to point out what direct and indirect connections there are between space-narratives and retail company strategies. We wanted to emphasize that effective and efficient retail strategies cannot be elaborated without a complex approach to space that includes all the novel space-interpretations: besides geographical space, virtual and hybrid spaces must be immanent part of retail strategies.

Our conceptual research and the introduced examples underline the importance of spatial thinking in business decisions. Further researches are needed to carry out in the fields of

theoretical modeling and in practice too. In the near future we aim to create a spatial model on smart retailing strategies, and we plan to conduct empirical researches to underpin this conceptual framework.

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THE TERRITORIAL CONTEXTS OF INDUSTRY 4.0 IN HUNGARY, THE PRESENT AND FUTURE CHALLENGES AND EXPECTATIONS OF THE DIGITAL ECOSYSTEM

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Abstract

In the article we present our ecosystem based approach of industrial digitalization in Hungary, and provide empirical evidence that Industry 4.0 doesn't create a uniform platform for the expectations of the actors of the Hungarian industrial digitization ecosystem in respect to the expected priorities of macro level industry policy; and regarding the implementation of the innovations there are differences between the actors in dependence of their geographical location. In the empirical part of the article we rely on the survey of the Industry 4.0 National Technology Platform and demonstrate its conclusions. We also introduce the dualistic structure of industry in Hungary by creating groups of counties on the basis of macroeconomic indicators. We highlight the regional differences using our own Industry 4.0 readiness classification system. Based on our results it was confirmed that the digital transformation of the industry can be achieved only by applying differentiated, region specific and ecosystem based tools.

Keywords: Industry 4.0, I4.0, Digital ecosystem, Territorial challenges

INTRODUCTION

The accelerating integration processes of the info-communication technologies and the cyber-physical production and logistic systems have generated fundamental changes in the economy which are denoted today shortly as the Industry 4.0 (Monostori et al., 2016; Schuh et al., 2017; Kagermann, Wahlster, & Helbring, 2013). The notion of Industry 4.0 has become part of public knowledge, although the exact interpretation of its definition is still subject to frequent discussions. There is a unanimous consensus in one issue only, namely with respect to the impacts of Industry 4.0 on competitiveness both at the micro and macro levels (Kagermann et al., 2013; Szalavetz, 2016a, 2016b). The new innovations in industrial digitalization and consequently, the changes in the business paradigm induce substantial changes in the internal operation and business model of industrial companies and, in parallel with this, their external relationships as well and affect also to a great extent the expectations towards their economic

environment (Spath et al., 2013; Monostori et al., 2016). This progress stipulates changes in the structure of value chains, that can (and does indeed) affect the investment and relocation strategies of companies (Szalavetz, 2016a; Porter & Heppelmann, 2014). In addition to the technical readiness of the enterprises, (sharing) knowledge and research collaboration will be the key issues in the future. In order to survive, industrial players need to increase their productivity, offer innovative services with higher added value, and create personalized products at mass prices.

The cooperation of local actors in the field of innovation is expected to lead to the development of the regions – as territorial development is also an important tool to improve competitiveness (Lengyel, 2010, 2016; Rechnitzer, 1998). In the coming period, the state institutional system (including research and education) will play a prominent role which is already proved by the prevalent economic development programmes and industrial policy of several countries. Other actors of the envisioned new ecosystem are social and professional organizations, and humans who are always to stay in the focal point.

The development path of the Hungarian economy is approaching a turning point. Like most East-Central European countries with a dualistic economic structure similar to that in Hungary (driven by powerful, technologically advanced foreign companies, in contrast to a number of small and medium sized local actors usually in the role of suppliers), and who are in the reindustrializing process, the growth of the past period in Hungary was largely based on export-oriented production primarily on the ground of available high-value-for-money workforce. Surprisingly, Hungary is one of the most industrialized countries in Europe with industry's share of GDP at 23.5% in 2014, whose economic performance is highly dependent on car manufacturing and its related industries (Roland Berger, 2016a; Pongrácz & Nick, 2017; NGM, 2016). At the government level, and in line with the European Union's reindustrialization strategy, the Hungarian government intends to foster the digitisation of industry. The Irinyi Plan is a complex toolkit that defines the directions of the targeted innovative industrial development. As a declared main objective, industry's share in the gross domestic product is to rise to 30% by 2020.

Established in 2016, the Hungarian Industry 4.0 National Technology Platform (2016, NTP) launched its first questionnaire project that explores the Hungarian Industry 4.0 ecosystem, i.e. the technological and business maturity of individual companies from the digitization point of view, and provides also an insight into the current trends in the relevant macroeconomic developments. The description of the questionnaire can be found in Nick et al. (2019).

The purpose of this paper is to highlight from the territorial dependence perspective the results of the empirical research on the sample of Hungarian companies potentially involved in Industry 4.0, and place them into a broader economic context. The main hypothesis of the study

is that the potential regional differences in the Industry 4.0 related issues will show perceptible connection with the geographic consequences of the dualistic structure of the Hungarian industry. Therefore, the information received from the respondents was analysed from the aspects of:

- company size, ownership, industry and their international economic embeddedness;
- the evaluation of their status in terms of technical development, innovative potential and human resources' competencies;
- the perception of the current economic and institutional environment considering the key Industry 4.0 issues and addressing the respondents' expectations, too.

This will also provide the possibility to examine the role and state of readiness of SMEs. On the one hand, it is a highly important point because the conditions of competition are going to change for suppliers and providers of services too, and on the other hand, SMEs have a significant influence on regional competitiveness as well (Kovács, Lux, & Páger, 2017).

THEORETICAL BACKGROUND

Territorial competitiveness

The concept of cyberspace is becoming more and more common, but this doesn't neutralise the relevance of the geographic location where a given economic actor performs its activity. Therefore, we consider it important to identify and reveal the factors that affect the relationship between territorial criteria and Industry 4.0 companies.

As people in everyday life, countries, regions and cities are constantly competing with each other for better resources. One aim could be to increase the number of more skilled workers – as they are able to create better and more products – but it is also important to acquire more financial resources (Porter, 1990).

In economic terms, the competition is defined as the activity of two or more players to gain advantage over each other, observing certain rules (Chikán, 2008). At the company level, it means to win a better position in the market place; for countries and regions the competition can be considered as to reach a better situation at a regional level. In OECD terms, competitiveness is the ability of companies, industries, regions and supranational regions to generate relatively high income and attain a relatively high level of employment on a sustainable basis, while being exposed to international competition permanently. (CEC, 1996; OECD, 1997, 1998).

The government's ambition for the 21st century Europe is the conceptual, strategic management of areas and the elimination of inequalities between the developed and the

underdeveloped areas. This is an interesting counterpoint to competition, given that it interferes with competition by reducing the differences between different territorial units.

It is also advisable to use indicators to measure competitiveness – for the sake of more accurate comparability. Considering the fact that countless criteria, indicators and their weightings can be taken into account, we can apply several existing and proven practices[8,9] within the scope of our research. One model for measuring the competitiveness of a region is the Lengyel pyramid model (Lengyel, 2010). In the model, the local environment plays a prominent role which reinforces our idea that examining this indicator brings us closer to the Industry 4.0. The Lengyel pyramid model identifies small and medium sized enterprises (performing basic activities) as the main factors that may improve the competitiveness of the given territorial unit directly and in a short term. They also can have a serious multiplier effect (Lengyel, 2010; Szerb, 2010).

The latest forms of post-Fordist economies can also be called knowledge based economies (Lengyel, 2010). A comparison of Fordist (or object based) economies and knowledge based economies appears in the works of Cséfalvay (2004), Enyedi (2012) and Rechnitzer (1998). With regard to the organization of the economy in post-Fordist regions, we can basically identify three types of regions (Lengyel, 2010):

- neo-Fordist (semi-periphery);
- knowledge applying;
- knowledge generating (central) region.

In fact, the knowledge generating region is an ideal embodiment of the objectives set out in the Fourth Industrial Revolution, as there are corporate clusters, close collaborations, and demand for highly qualified staff capable of meeting the requirements of R&D positions. These regions can produce their products tailored to individual needs in mass production, making the best use of the local conditions. The increase in the competitiveness of these regions is expected to be continuous and long-lasting. The primary goal for Hungary should be to move towards a knowledge generating region, which is also reflected in the Irinyi Plan.

Industry 4.0 ecosystem

Europe's industry of the 21st century faces serious and complex challenges (United Nations, 2011, 2015). The expectation of increasing productivity, the opportunity for an expanding practice of mass customization, the need for the entire product life cycle to be sustainable, the broadening global competition, the increasing demand for highly skilled workforce and the demographic changes are all issues that require the adaptation of the current model in use.

[8] IMD World Competitiveness Yearbook http://www.imd.org
[9] The World Bank Doing Business http://www.doingbusiness.org/

Companies have recognized the need for comprehensive solutions to respond effectively to these expectations (McKinsey & Company, 2013). Indeed, many companies create alliances, where academic and university knowledge is often involved as well.

In 2013, in order to maintain and enhance the economic potential of the country, the German federal government embraced the cooperation of actors in science and economy at the political level, and announced the Plattform Industrie 4.0 programme, which provided a good institutional framework and a secure base for the cooperation of government, science and economy (Kagermann et al., 2013). Over the last few years, creating platforms has become a general practice of countries around the world. These thoughts can be recognized in some countries' industrial development, industrial digitisation policies, each of which prioritises the improvement of a country's competitive position by enhancing industry performance.

Several experts remind that it is not fortunate to restrict the interpretation of the Industry 4.0 phenomenon only to industry and new technologies (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; Erol, Schumacher, & Sihn, 2016; Szalavetz, 2015; Porter & Heppelmann, 2014). A broader ecosystem approach is also represented to the concept. The key to competitiveness is the development of innovation capabilities. It can be observed that the spatial concentration and clustering of entities in the economic, academic and government spheres (known from the Triple-Helix model) facilitates the faster creation and diffusion of innovations (Etzkowitz & Leydesdorff, 1997; Porter, 1998). Modern innovation is not carried out in research laboratories of large companies, but as a result of systematic cooperation between diverse, wide-ranging innovation systems.

Although the virtual space created by computer networks eliminates the distance between the partners involved in certain relationships, the physical location of the given economic actor (i.e. the country in which it operates) is by no means indifferent and irrelevant. The definition of innovation clearly points to its influence on the environment, the effects of the milieu and its dominant role – thus the innovation of Industry 4.0 companies is an important issue that has to be examined. As innovation influences regional development, the success of a region depends on the embeddedness of innovation systems (Rechnitzer & Smahó, 2011). Competitive regions are the best suited for introducing innovative solutions. Cities, city networks and their inhabitants who are focused on spatial location have a key role. These actors together make up a large part of the territorial capital and influence the local innovation milieu.

In fact, the competitiveness of the region is an output – the input includes elements of its territorial capital. In Hungary, the process of reindustrialization (Lux, 2017) and digitization can be observed, in which the characteristics of companies (e.g. size, industrial location, international embeddedness) play different roles (Cristopherson, Martin, Sunley, & Tyler,

2014). The organizational, ownership related, technical, etc. innovations of the industry have had spatial consequences and formed the basis for regional studies (Barta, 2002; Barta, Czirfusz, & Kukely, 2008; Cséfalvay & Nikodémus, 1991; Horváth, 2000; Faragó & Lux, 2014; Kiss, 2008; Kiss, 2013; Kiss, 2013, Molnár & Lengyel, 2015).

Transformation of the spatial structure of Hungarian industry

The industrial legacy of the socialist system is characterized by an artificially high level of employment, it is diverse in terms of its level of development, fundamentally lagging behind, poorly adapted to the economic laws and territorially spread out. Besides the traditional industrial regions, fragmented industries scattered over nation wide is determinant, which was created by the large companies who outsourced their low-level activities into towns. Simultaneously, Hungary had an overcentralized industry, whose internal relationship networks have been largely constructed artificially, ignoring geographical logic (Barta, 2002, Kiss, 2010). Furthermore, the transport, communication and commercial infrastructure did not meet the market economy expectations of the age. At the same time, however, a significant amount of skilled workforce and a fairly established institutional system brought positive benefits as well. Under these circumstances, the Hungarian industry was in a fundamental crisis at the time of the political changes in 1990 (but that started already developing in the early 1980s, together with the entire Eastern bloc).

With the break-up of former COMECON relations, the old export markets almost disappeared. In such circumstances, the capital-poor industry had no choice but to build on the inflow of significant foreign direct investment during the privatization process, and thus adapting more advanced technologies through a network of trans- and multinational companies and also reaching new markets. Most of the industrial production is now exported (according to the 2018 KSH[10] data, 73% of manufacturing sales are directed abroad), in which the later, typically green-field investments in the machinery sector play a significant role.

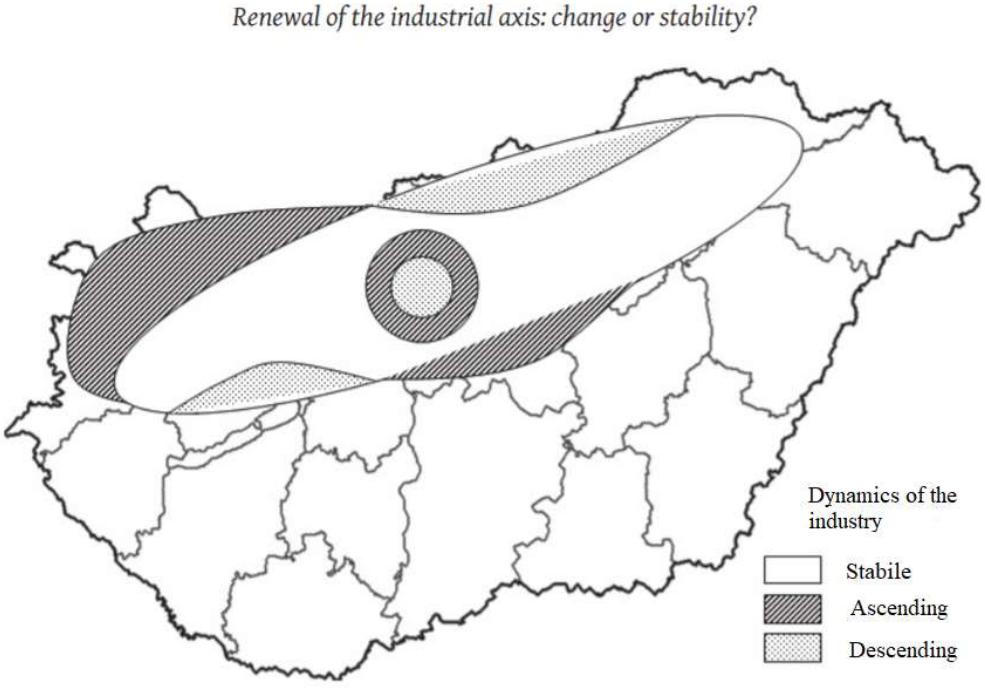
Capitalist companies have placed great emphasis on improving productivity, resulting in the stagnation or a slight decline in employment in the country, despite the growing industrial output since the 2000s. Overall, during the last two decades, Hungary seems to be lagging behind the former socialist countries joining the EU, in terms of the pace of industrial growth (Nagy et al., 2019), while the share of foreign direct investment in the economy is the highest here (KSH, 2017). The key issue for the country's industrial development lies in the responses to the challenges of Industry 4.0, and whether it will succeed in moving towards higher value-

[10] Central Statistical Office (Központi Statisztikai Hivatal, in Hungarian)

added activities in global and European value chains. (Szalavetz, 2016a, 2016b, Irinyi Plan). After a stable industrial structure of the decade preceding the regime change, a marked differentiation process started at the county level from the 1990s on (Nemes, Nagy, & Lőcsei, 2015). The effect of the inflow of foreign direct investment was first manifested in the north-western part of the country and the capital, from the early 90s on.

Later – partly as a result of the motorway constructions – foreign capital appeared in other regions as well, and as a result, reindustrialization started. The detailed analysis of the factors influencing the spatial structure of the industry after the regime change (from human resources through industrial parks to clusterization) is provided by Éva Kiss (2010). This process seems to reproduce the spatial relationships typical for the socialist past, i.e. the traditional North-South division, which is associated with path dependence theory of evolutionary economic geography by Molnár & Lengyel (2015), and visualized in Figure 1. In addition to the advancement of the north-western region after the regime change, during the throw-back of the northern peripheral basins and the industrial centre of Mecsek, reindustrialization tendencies can be observed in the areas of the Great Hungarian Plain near the capital (from Hatvan through Jászság and Szolnok to Kecskemét) and in some county seats, more recently in Debrecen. Our analysis also provides indirect evidence for the industrial devaluation of rural areas.

Figure 1 The industrial axis in the reshaping



Source: Molnár and Lengyel (2015)

The dualism of industry and of the entire Hungarian economy can be described with the dichotomy of the

- capital intensive, technologically advanced large corporations that produce a significant proportion of the GDP and export revenue,
- and the domestic SMEs that are forced to adapt to the circumstances and produce for the internal market, possibly acting as suppliers (Lux, 2017).

The image is further modulated by some successful domestic big companies (e.g. the pharmaceutical industry), by the often domestically owned food industry, the declining metal processing industry (which is becoming more and more involved in the supply chains and is dominated by SMEs) and the labour intensive TCLF sector, which is looking for its place in niche markets of special products and as vehicle industry suppliers (Molnár, 2017). Cséfalvay (2004) sees the low level of cooperation between the two sectors as the most important problem with the dual structure. This situation has only slightly improved since then, so spill-over effects are also weaker than expected. Economic dualism turns up in the spatial structure, too, as large foreign companies have greater space-forming capabilities (Lux, 2017). In the Northern Trans-Danubian area, where many foreign companies have been present for a long time, more and more diverse production links are emerging – mainly in the automotive industry – and the benefits of agglomeration are increasingly to be seen. In contrast, most parts of the Great Plain and Southern Trans-Danubian area are dominated by domestic-owned companies with fewer options. Here, the weight of the industry is smaller, and foreign plants are appearing sporadically only. On the basis of the trends so far, it can be stated that in the externally controlled industrial development model, building the relationships takes a long time, and the newly joined regions have all to struggle through the same path. Notwithstanding, it is only partially possible to catch up with the West this way. The possibility to accelerate this model, or an alternative for it, with perspectives of upgrading should be found in industrial digitalization, which shows increasing integration and accelerating processes, reactions.

Geographical effects of Industry 4.0

The potential spatial effects of the fourth industrial revolution have been recognized by researchers, including Porter and Heppelmann (2014), Khajavi et al. (2014), or Roland Berger (2016b). In Hungary, Andrea Szalavetz (2016a, b) can be mentioned. Strengthening vertical and horizontal integration as a key feature of Industry 4.0, project the drastic transformation of the entire value chain. For example, subsidiaries or suppliers may gain new features, which could lead to upgrading, but reassessment the viability of individual functions is also possible. Based on Szalavetz's (2016b) research, tendencies are not yet clearly promising. Although

many new functions appear in the Hungarian subsidiaries, this often happens with the general weakening of their position in the value chain (they move towards the bottom of the smile-curve). Reshoring or nearshoring are possible consequences of Industry 4.0. Fashion industry provides some examples of this phenomenon due to the rapidly changing market (Laseur, 2019). Broadening and deepening horizontal and vertical integration and creating the new ecosystem are the main motivations for increasing clusterization.

Indicators such as the Roland Berger Industry 4.0 Readiness Index or the Digital Economy and Society Index (DESI) allow for a comparative assessment of countries. Hungary shows quite mixed picture, but in total there is no significant lag behind the EU average (Pongrácz & Nick, 2017). One relevant strategic goal for the Hungarian industry is to step over to the group of Frontrunners from the Traditionalists in the Roland Berger categorization (Roland Berger, 2016a). By linking micro- and macro-level investigations, sectoral or regional studies may also be possible (e.g. Losonci et al., 2019).

DATA AND METHODS

The empirical research aims to map the Hungarian Industry 4.0 ecosystem. What are the differences in the technical readiness of individual companies? How does the location of the area affect the strategic characteristics of each actor? In order to get to know the current situation and the planned future thoroughly, it is necessary to assess:

- the current status of Industry 4.0 awareness, acceptance and implementation;
- the R&D&I cooperation potential;
- the competitiveness potential and conditions;
- relevant challenges for human resources,

that is, the overall spatial effects of industrial digitisation.

For this reason, we perform the primary analysis on the data from the survey of the Industry 4.0 National Technology Platform. Besides the geographic position, other aspects characterizing the dualistic economy are investigated, to provide the potential basis for explanations. For the questionnaire itself, the research process and methodology used, as well as its detailed structure and general results, see Nick, Szaller, Bergmann, & Várgedő (2019) and Nick,Várgedő, & Fülep (2018).

The size of the sample was limited, thus the analysis had to be performed on a rather small population of groups, so the results are to be interpreted with caution.

Territorial categories used in the analysis

The interpretation of the territory related results of the questionnaire is done on a county scale. Considering that generally only a few data are available at the county level, they are grouped by industrial geographic factors. The analysis was executed based on this categorization. The purpose of this work was to create categories representing the dualistic structure of the industry that fit the analytical results and provide also a tool to demonstrate the spatial structure of the Hungarian industry.

The basis for the categorization was the regional data of the HCSO in 2017[11]. The categories are created using the measure of industrial production per employee (in any field of economy) in the county. In contrast to labour productivity, this indicator has its advantages in reflecting both the weight and the level of development of the industry. County level indicators are related to the one of the whole country. In the following formula used to determine the categories for the counties p_i denotes the industrial production of the individual county *i*, while p_0 denotes this value for the whole country, e_i and e_0 are all the number of employees of the county *i* and the country, respectively. The indicator (I), which is the basis of the categorization can be computed on the following way:

$$I = \frac{p_i/e_i}{p_0/e_0}$$

From Table 1 one can see the clear separating line between counties that are above and below the national average. On this basis, we can distinguish between industrialized and less industrialized counties. This indicator is well aligned with other indicators related to the dual structure of industry, such as productivity (million HUF / employee), the export orientation and the weight of the machinery industry. An exception is Nógrád, where the weight of the industry is small, distorted by some foreign actors. Somogy has to be treated differently because of some companies like Flextronics in Tab, that have their headquarters here with all their production being recorded here while having a net of production sites in other counties. With the help of the local business tax and corporate production data, we obtained upper estimates for industrial production in this county, and it has turned out that half of the county's official production is not performed there. Accordingly, the table contains a reduced value. The opposite is true for Zala: the number of companies with non-local seats (e.g. Tungsram, Flex) are considerable,

[11] http://www.ksh.hu/docs/hun/xftp/megy/184/index.html#

however the former method is not applicable. In any case, it is doubtful that Zala would ever become one of the first counties from its current last place.

Table 1 The indicator compared to other relevant data

County	Indicator	Productivity	Export rate	Weight of machine industry
Győr-Moson-Sopron	288%	73 232	91%	43%
Komárom-Esztergom	275%	60 050	84%	49%
Fejér	214%	60 779	83%	38%
Heves	185%	61 058	90%	35%
Bács-Kiskun	185%	65 628	81%	33%
Vas	163%	41 040	88%	41%
Borsod-Abaúj-Zemplén	158%	72 547	79%	25%
Jász-Nagykun-Szolnok	157%	49 764	83%	34%
Veszprém	131%	39 002	80%	38%
Pest	77%	37 210	71%	26%
Nógrád	69%	28 270	89%	27%
Somogy	63%	46 303	86%	29%
Hajdú-Bihar	55%	32 122	72%	19%
Csongrád	53%	25 904	63%	23%
Szabolcs-Szatmár-Bereg	52%	25 105	75%	22%
Tolna	47%	22 774	69%	24%
Budapest	46%	46 259	62%	11%
Békés	42%	21 959	62%	23%
Baranya	37%	26 266	64%	18%
Zala	32%	16 868	53%	23%

The two basic categories were further differentiated based on geographical considerations. On the one hand, we distinguished between the Western (in Trans-Danubia, blue in Table 1) and the Eastern (on the East of the Danube, green) categories, which is not only justified by topographical reasons, but also that reindustrialization started later in the green zone. On the other hand, the separation of the capital region (the Central Region with red) is definitely necessary, since this city and its surroundings – being the only metropolitan area in the country – define quite different conditions for the economy. Lastly, the less industrialized counties were divided into knowledge centres (where the regional centres for large universities operate, with orange) and peripheral counties (yellow) following Lengyel and Varga (2018). County categories are shown on the map of Hungary in

Figure **2**.

Figure 2 Counties in Hungary - categorised

RESULTS AND DISCUSSION

The characteristics of the sample based on background issues

Table 2 Number of companies in the manufacturing sectors by regions with the number of completed questionnaires

Region	Number of companies	Completed questionnaires	Filling rate
Centre	19133	59	3,1 ‰
West Ind.	7008	42	6,0 ‰
East Ind.	6289	28	4,5 ‰
Knowledge centre	4382	22	5,0 ‰
Periphery	5416	17	3,1 ‰

In the development of county categories, besides of applying the industry-focused logic, we also tried to obtain categories with a significant number of answers in each. This is only partially met in the case of less industrialized counties, thus the responses from knowledge centres and periphery - although shown separately in the representation - are often treated together. The number of items in each county category does not show a noticeable deviance in their tendency

from what the professional logic would predict for the spatial distribution of companies involved in Industry 4.0 – this supports their usability in the analysis. The pattern seems to be less concentrated around the centre than the industry, by the way, it is logical that on the periphery, fewer companies are included than in the region that is leading in reindustrialization. In the following diagrams, one can see some features in connection with the group of survey participants for each territorial category, which are important for later analysis. In each county category, enterprises are mixed in terms of the number of employees. Smaller companies are more prevalent in the central the knowledge centre counties. Microbusinesses can only be found here, which can be partly explained by the close concentration of companies carrying out softer industrial activities (e.g. consultancy) near the universities.

There is no striking difference regarding the ownership. We have added some of the majority owned companies to the ones of exclusive foreign and Hungarian ownership. On the periphery, the somewhat smaller number of foreign participants are in line with the lower presence of foreign direct capital in these counties. The higher proportion of Eastern industrialized counties may be explained by the regional supplier network and relationships that are less developed due to the temporal delay vis-a-vis their Western counterparts. In the international production co-operation – as expected – the Western industrialized counties are most likely to be involved, while in the peripheral counties this is somewhat less typical. In Figure 3 and Figure **4**, one can see the distributions of the respondents by these factors (small company: up to 50 employees, middle: 51-250 employees, large: more than 250 employees).

Figure 3 Results of the questionnaire

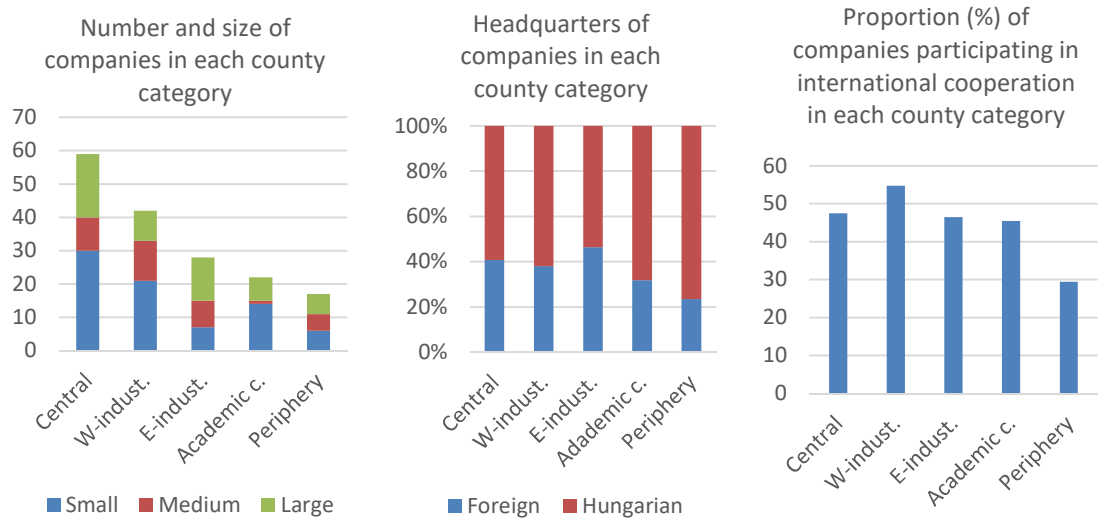
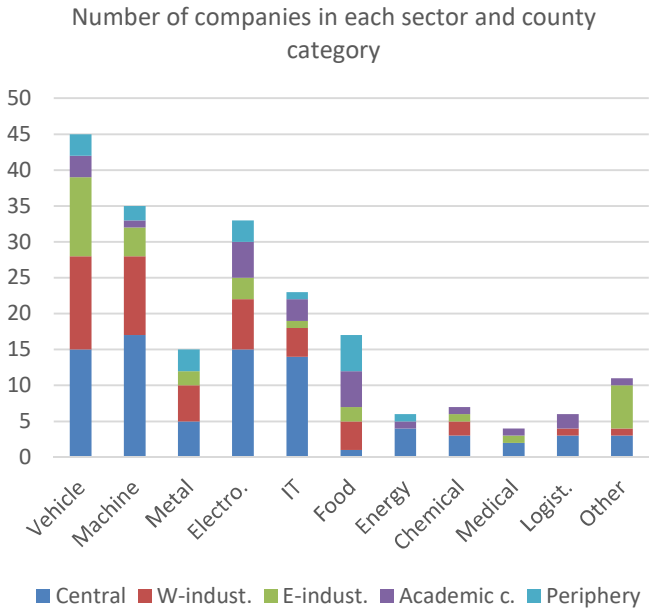


Figure 4 Number of companies in each industrial sector and county category



The sectoral breakdown of the companies that participated in the questionnaire clearly shows the predominance of the machinery industry, as expected in an Industry 4.0 online questionnaire. Out of the 168 respondents, 14 did not designate any category, while there were also several participants who marked two or more activity types that generally do not contradict a consistent portfolio (e.g. vehicle industry + machine industry in 9 cases, machine industry + metal industry in 6 cases, electronics + ICT in 6 cases). In the following, we will consider all companies with the same weight in the sector analyses that have marked a given activity, as there is no basis to assume that they do not carry the sector's characteristics. The populations in the sample provided an opportunity to examine the vehicle, machinery, metal, electronics and food industries, and the ICT sector as well. From a territorial point of view it can be stated that the weight of the activities related to the machinery industry is the highest in the Western industrialized counties (vehicle, machine, metal, electronics industry together account for 75% of total industrial production), and the lowest in the knowledge centre counties (40%). The automotive industry is the most common in the Eastern industrialized counties, while the food industry is typical in the two groups of counties that are less affected by reindustrialization. The increased weight of the ICT sector in Budapest and somewhat in the knowledge centre counties is conspicuous and logical.

Other sector specific features of the sample refer to the fact that in the food industry, domestic large companies; in the ICT sector, small businesses are the most typical. Domestic

property dominates in the metal industry, while the share of foreign ownership is relatively higher in the automotive and electronics industries – here both small and large companies are frequent. International production cooperation in the food industry hardly exists and is not common in IT companies either, but is very typical in the automotive industry, and also more than half of electronics and machine manufacturers cooperate with producers of other countries.

According to some additional background surveys, the share of domestic ownership is very high in the case of medium-sized companies (80%), this value is little higher than 60% for smaller companies, and 50% for large enterprises. By the way, the division of companies into this three categories has shown interesting results in other cases as well. Medium-sized companies have repeatedly shown results that are analogous to large businesses, while in other cases they have been completely different from small and large companies. In international production cooperation, foreign companies clearly participate more often (64%) than domestic ones (37%).

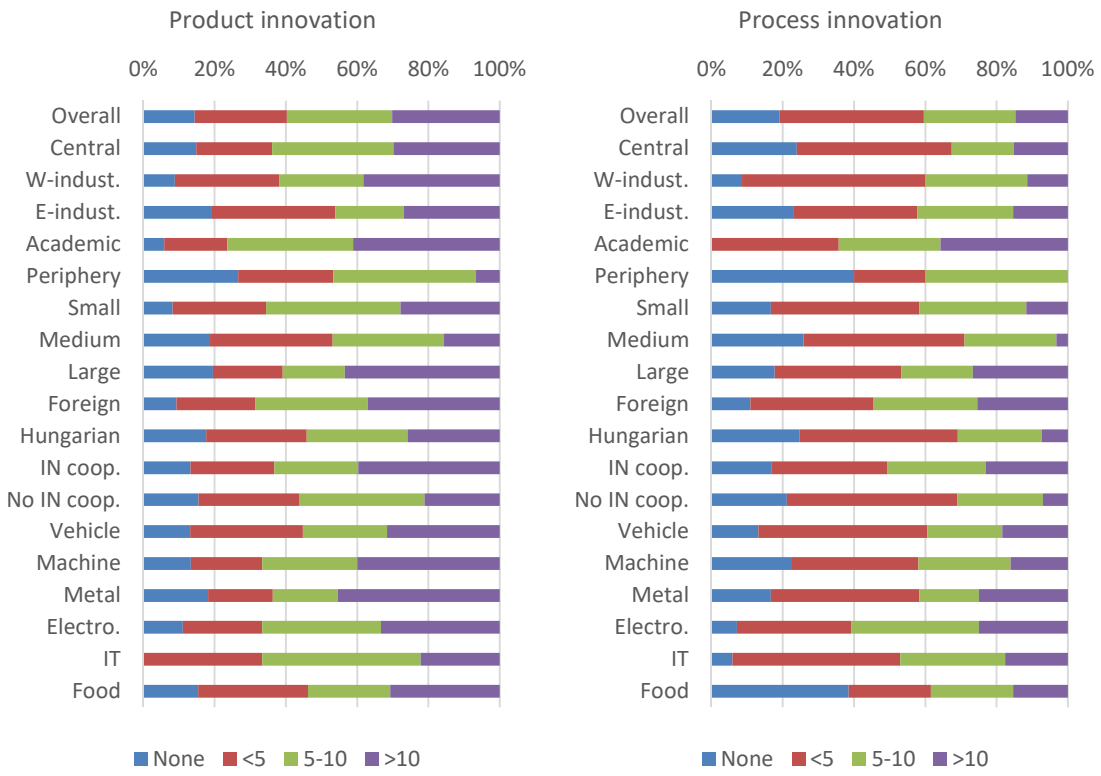
In this study, we also compare spatial aspects with others (industry, company size, ownership). Considering that the online questionnaire is more likely to be filled in by companies who are more concerned with, and affected by Industry 4.0, we are not focusing on the exact extent of their variance. These are only used to indicate qualitatively the regional (and other) differences. More preferably, we concentrate on exploring the economically relevant environment (human resources, infrastructure, barriers, etc.), which offer the opportunity to draw well-generalizable consequences. The background data presented above provide a variety of aspects for analysis.

Innovativeness

When the participants were asked whether the company introduced a new or significantly improved product / service or process / method, the possible answers were "no", "less than 5", "5-10", "more than 10". These are depicted in the diagrams of Figure 5 by different background categories (area, size and sector). Although the trend draws the advantage of large companies, it is still difficult to imagine how a great number of these companies could be operating for 5 years without adding a new product to their portfolio or introducing innovations in their production processes. The subjectivity of self-declaration and possible differences in the interpretation of concepts can distort the results. Foreign-owned and international companies perform somewhat better. From the sector perspective, IT seems to be the most innovative, the

food industry shows some lags in terms of processes and methods. In the metal industry, the product portfolio is changing faster, which may be due to its supplier role. Neither the vehicle and machine industries nor the electronics are standing out clearly, although this may partly be attributable to their large weight in the sample. From a regional point of view, the lack of peripheral counties is not surprising, but in contrast to the high value of the knowledge centre counties, the only average performance of the central region is considerable and needs further investigation.

Figure 5 Product and process innovation

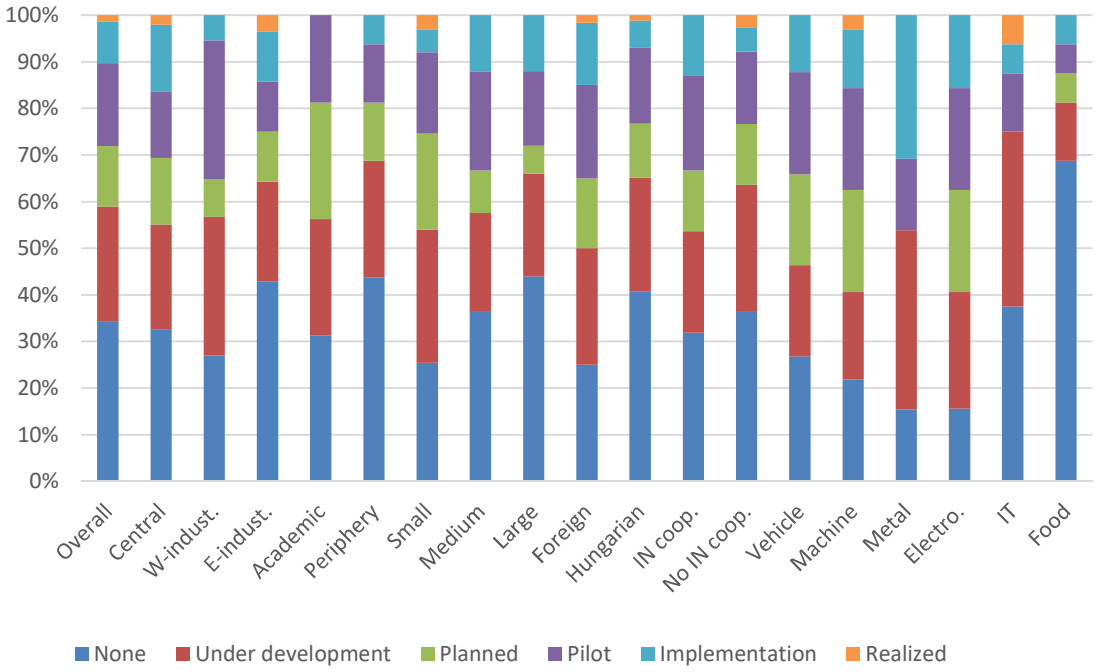


Strategy

The state of the strategy can be a relatively general indicator of the industry's readiness related to Industry 4.0. From this point of view, we cannot see sharp territorial differences, but the Western industrialized counties are at the forefront, and the periphery has the least advanced state of the strategy. It is also noteworthy that companies in the knowledge centre counties theoretically seem also to be quite ahead, while none of them has come to implementation yet (see

Figure 6).

Figure 6 Status of existing strategy if any, for Industry 4.0



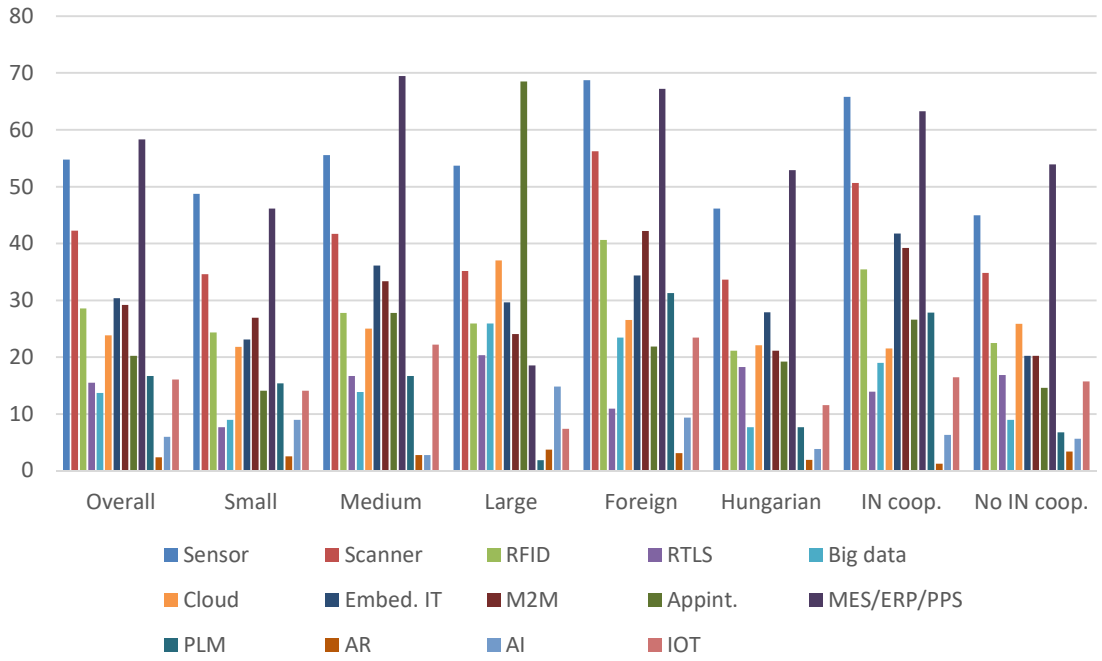
Apparently, there exists a negative correlation between the size of the company and the state of the Industry 4.0 strategy. On the one hand, this might be due to the larger inertia, and more cautious program creation and communication of the larger organizations, but at the same time one should not forget that the food industry is overrepresented among the large companies, and the food industry's interest in Industry 4.0 is obviously much lower. It is also evident that foreign companies and those active in international collaboration are moving forward more speedily, underpinning the thesis that the technological development of the country is rather controlled from outside. Besides the serious disadvantage of the food industry's position – as expected – other key sectors (especially electronics) perform substantially better in Industry 4.0. In the case of the metal industry, perhaps the less complex activity spectrum may be the reason why they can more easily develop and implement an Industry 4.0 strategy (they do not appear to be a leader by other aspects). In the case of the ICT sector, an Industry 4.0 strategy may probably not always be defined for the company itself, because of its main role as a service and support provider. This assumption is also confirmed by the technological data.

Technologies

Sectoral trends should be looked at first, because they are determinant in the evaluation of other aspects. Evidently, the automotive industry and machine manufacturing are showing similar trends in technological preferences, which are more or less in line with the electronics industry,

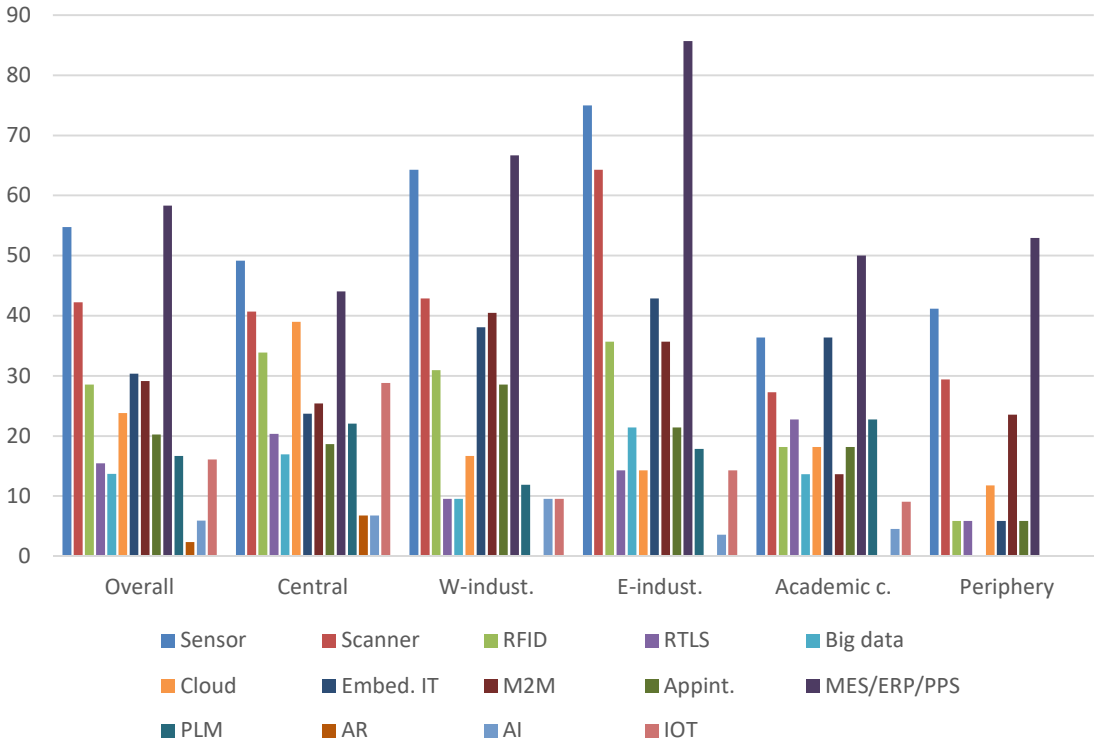
too. Sensors, mobile terminals, radio frequency identification and M2M communication are more frequently used, showing the relevance of smart manufacturing in the forerunners' sectors. Horizontal system integration is the most widespread in the automotive, machinery and metal industries participating in extensive supplier networks, thus the higher ratio of MES / ERP / PPS is understandable. Currently, IOT, Big Data, Cloud, and AI applications are dominated by representatives of the ICT sector, while AR has not entered the Hungarian industry at all, which is obviously not a peculiarly Hungarian feature, but is rather due to the current immaturity of the technology. In overall, the food industry and the metal industry are lagging behind the other sectors in the diversity of implementing Industry 4.0 (see Figure 7 and Figure 8).

Figure 7 Distribution of each technology (% ratio of companies that adopt it) per company characteristic



With the size of the company, the frequency of applying the I4.0 technologies usually increase, which, however, cannot only be considered as an intense development trend, but can also be explained by the more diversified solutions that are derived from the more diverse range of tasks caused by the larger size. The strong positive relationship between application integration and enterprise size may be due to the wider supplier network, while MES / ERP / PPS systems are more difficult to implement for a large company, and raise issues of security and competence, like in the case of industrial internet. There are similar trends in foreign-Hungarian aspect and international production cooperation as seen earlier, thus increasingly reinforcing the preconception of the dual economy.

Figure 8 Distribution of each technology (% ratio of companies that adopt it) per county group



Here, at the regional level, the duality of the industrial spatial structure can be clearly determined, as both categories of counties in the industrial periphery are underperforming the others. Interestingly, it is not the Western, but the Eastern industrialized counties that are standing out. This can be caused (beside random effects) by the fact that generally larger companies are included in the sample, with a higher proportion of foreign companies. In the central region, we can see again the characteristics of IT companies dominating, but this region is behind the reindustrializing regions in general. This is also in line with the macroeconomic data, as the productivity of the manufacturing sector in Budapest and Pest county is below those most affected by industrial activity (see Table 1).

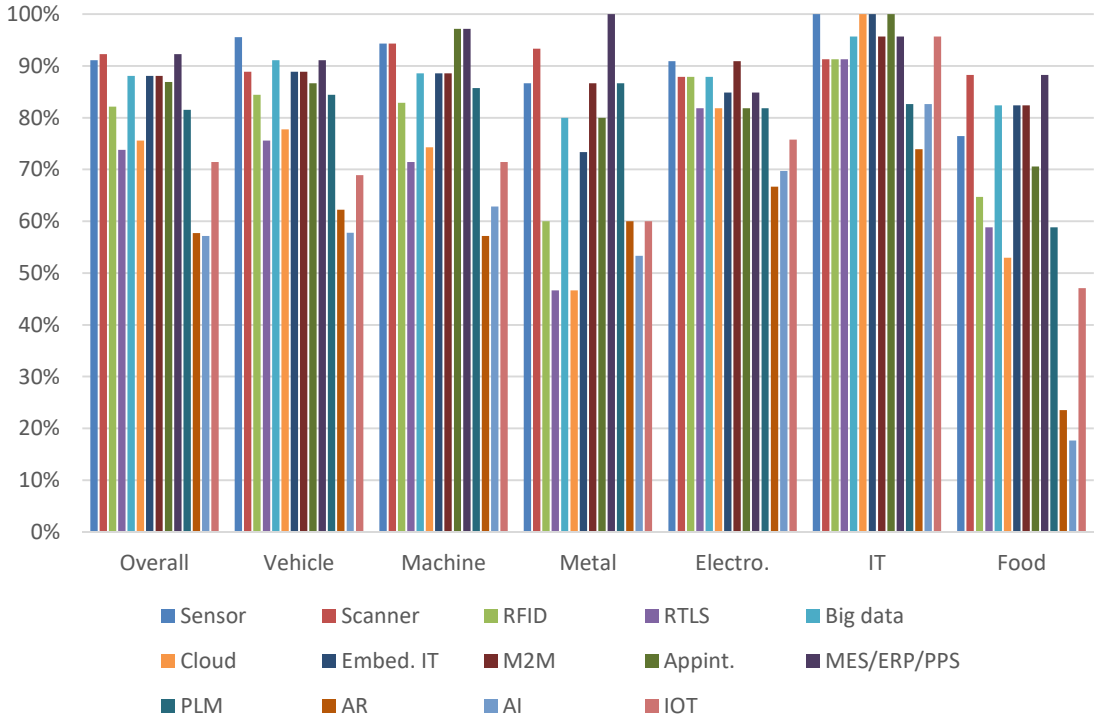
Assessing the role of the key I4.0 technologies in the future

Companies see the opportunities in I4.0 technologies, but in many cases they don't utilise them yet. Exploring the underlying causes is important: it requires qualitative research. Even in the case of the technologies, that were assessed less relevant now, more than half of the respondents believe that it will be important in the future, yet it is surprising that the weakest result is related to artificial intelligence, as this would probably have the widest future impact of all technologies[12]. Undoubtedly, the future of this is probably the least predictable. Based on the

[12] At the time of the survey, the Hungarian Artificial Intelligence Coalition, initiated by the Ministry, was not set up yet. Its aim is to bring together companies that apply AI and to facilitate the dissemination of this technology.

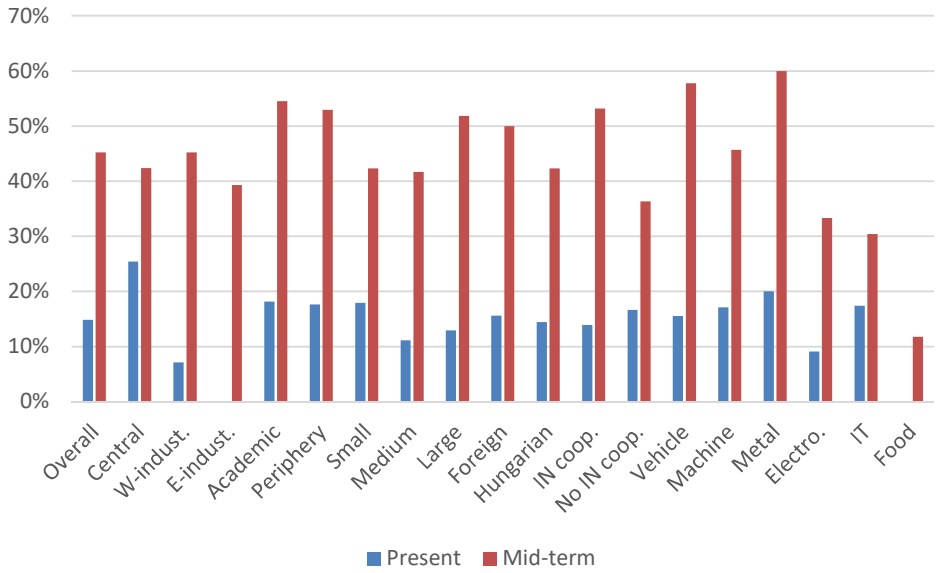
results, the food industry will probably be less technology oriented in the future. Otherwise, no significant trends were found in the geographical or other aspects. All technologies in the capital region perform better, while the peripheral ones are more subdued (see Figure 9).

Figure 9 Relevance of technologies in the future per sector (ratio of answers: 'a priority issue' and 'of high priority' added up)



Robotization

Figure 10 Importance of robotization



Chyba! Nenalezen zdroj odkazů. shows how many percent of respondents believe that the usage of robotics in their industry is largely or completely typical in the present (2017) and will be that in the near future (2018-20). First of all, it is a surprising fact that only 15% of the companies currently see robotization as a typical trend. The fact that in the medium term a significant jump is assumed by them, refers to excessive techno-optimism and raises the question of why there is such a discrepancy between vision and reality. Our previous experience in the literature further contradicts the fact that in the automotive industry, where the typical robotic density exceeds by one order of magnitude that of the other sectors (IFR, 2018), respondents attribute almost the same importance as the average to this technology. In the electronics sector, which was the second most robotized among the sectors, the importance is below average. The high proportion of the 'in certain areas' response, in connection with human-robot collaboration recently emphasized by the companies, and the assumption that robotics is concentrated in some large, primarily assembly-related actors with low weight among the respondents, are the key factors in resolving this contradiction. In electronics, tasks requiring more sophisticated manipulation are more typical, which are difficult to robotize. Neither supporting nor disproving possible explanations is viable on the basis of these data. In the metal industry, the role of robotics is considered to be higher than average, while the technology is considered completely marginal in the food industry, and consequently, it is currently not applied.

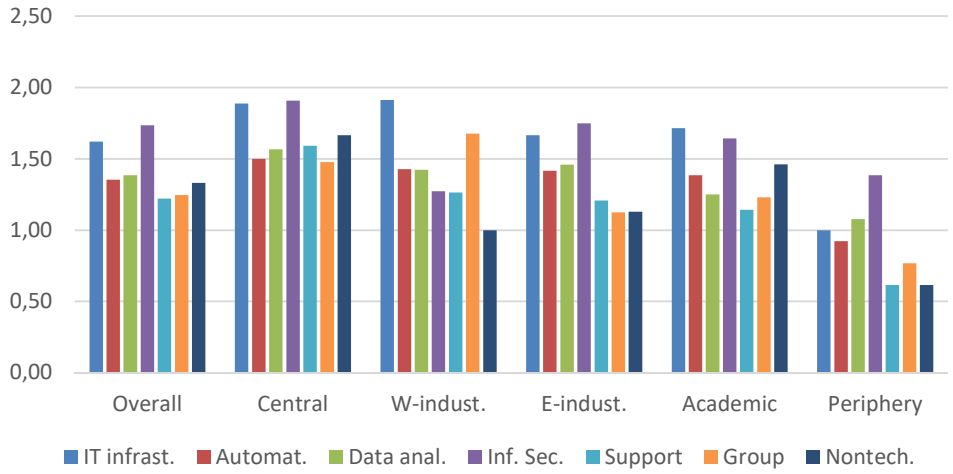
From the territorial point of view, the use of robotics is the lowest in the Eastern reindustrialized counties, but it is barely better in their Western counterparts, the interpretation of which goes beyond the competence of the writers of this article. The higher value of the central region may indicate efforts to replace more expensive labour.

Human resources

Companies have also assessed the competencies of their employees according to some relevant aspects of Industry 4.0 (IT infrastructure, automation techniques, data evaluation, data security / communication security, development and use of support systems, teamwork applications, and non-technical competencies such as systems and process approach). The four-level scale spans from "does not exist" to "relevant and outstanding". The responses are assigned the values 0, 1, 2, 3, respectively, the averages are shown in

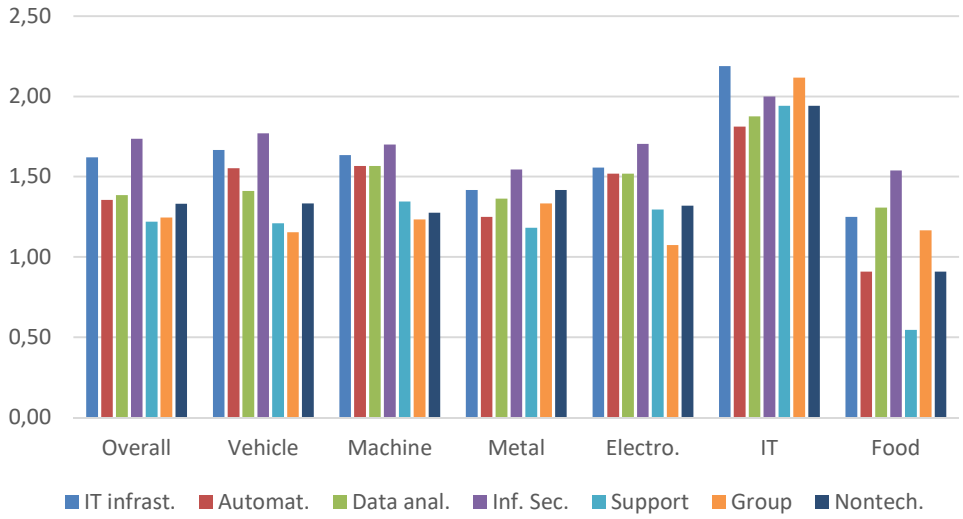
Figure 11 and Figure 12. In general, a low level of satisfaction can be unequivocally identified.

Figure 11 Evaluation of the employees' competences per county group



Employers' satisfaction with the competences of the workforce is clearly the largest and most balanced in the central region, and the smallest on the periphery. In detail, the northwest counties deviate from average in the positive direction in terms of teamwork applications, and deviate in the negative direction from the point of view of cybersecurity. This can be explained by the diversity of employee competences as well as by the employers' expectations. In knowledge centres and in the central region, companies are more satisfied with non-technical competencies, what is in direct connection with the role of higher education (in all fields) in these areas.

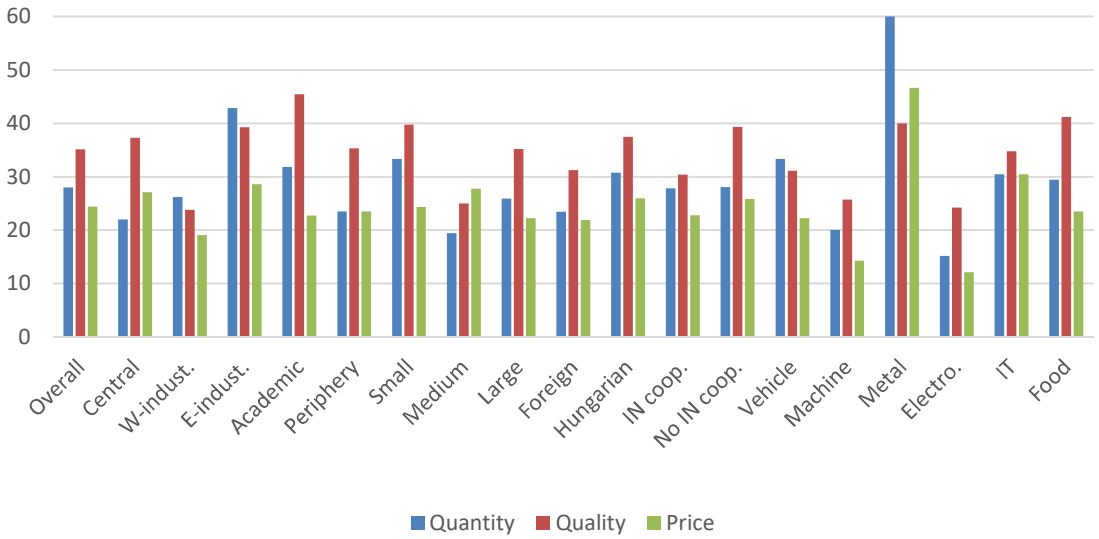
Figure 12 Evaluation of the employee competences per sector



The answers do not correlate significantly with the factors like the size of the company or the ownership. In the case of the most basic competencies in the ICT sector, the values are obviously the highest due to the focused recruitment and the typically intellectually demanding job profiles. Possible responses included the existence and fulfilment of expectations by employers at the same time. The low values in the food industry can be explained rather by the competences that were considered irrelevant in the sector than actual dissatisfaction with employees.

Research & development services

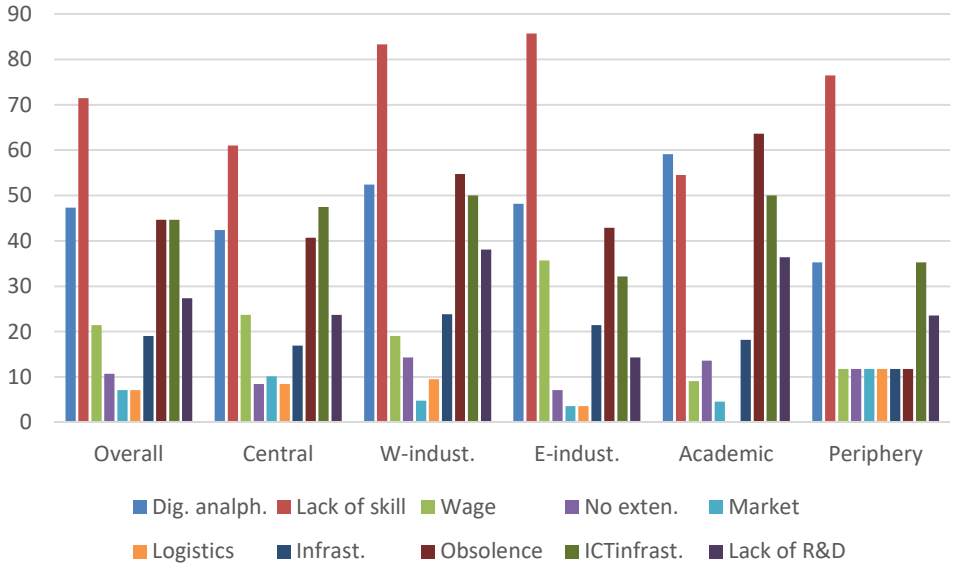
Figure 13 Ratio (%) of companies satisfied with domestic R&D offering



Generally speaking, respondents are not really satisfied with domestic R&D results and services, which, being less fixed to explicit locations, make it difficult to formulate definite sub-national spatial findings (see Figure 13). However, it is striking that the central region, and especially the Western industrialized counties, are more dissatisfied. But one has to be cautious in the interpretation since there might be significant geographical differences in user expectations as well. Smaller companies are somewhat more satisfied with the performance of the R&D sector, which provides hopefully the evidence that they are making use of the services and also cooperating with the players. The outstanding value of the metal industry is undermined by the fundamental dissatisfaction of the electronics sector, which, regarding the role of the industry, should be taken into account in strategic planning.

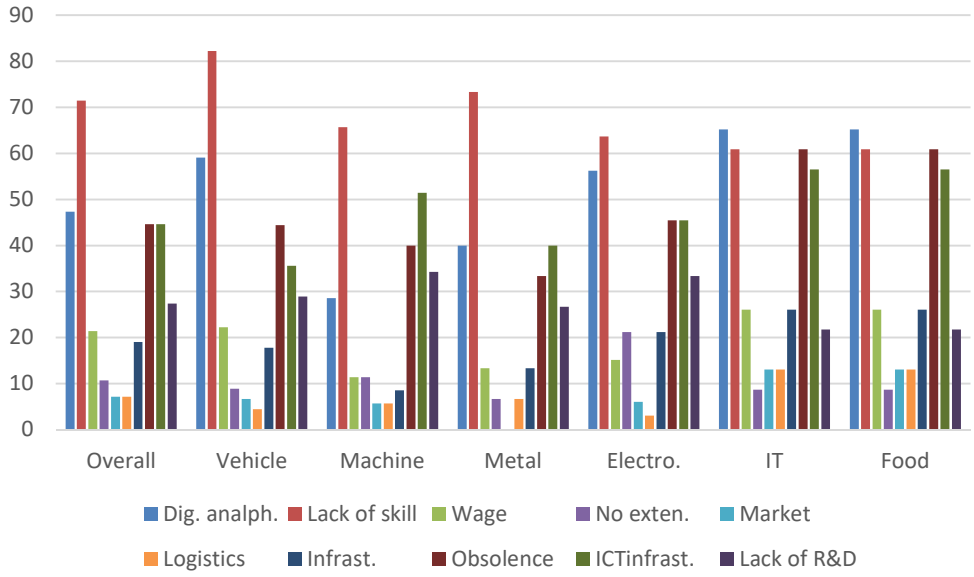
Obstacles

Figure 14 Obstacles of Industry 4.0 per county group



Among the constraints that are limiting competitiveness to increase, the lack of skilled labour is by far the largest problem, which was marked by more than 70% of the respondents (see **Chyba! Nenalezen zdroj odkazů.**). In this regard, the central region and the knowledge centre counties don't perceive this as such a grave problem, possibly due to the better training opportunities in large cities and their less industrial profile. Notwithstanding, and at the same time, digital illiteracy is the biggest problem in the counties where the three largest universities are located – but on the industrial periphery, this issue seems to be less problematic. Rising wage costs – presumably due to the effects of extensive industrial development anticipated in the near future – mostly affect companies in the Eastern reindustrializing counties. Neither the lack of expansion opportunities, nor the shrinking market opportunities, nor the rising logistics costs are a major constraint. Although the difference is not significant, it is definitely noteworthy that the underdeveloped infrastructure appears to be the largest problem in the most developed area, while this is rated as the smallest unfavourable factor on the periphery. Obsolete production technologies and processes in peripheral counties are not considered to be an obstacle (this may be due to newer plants), but the opposite is true in knowledge centres. Accessibility of information and communication technologies is an obstacle everywhere.

Figure 15 Obstacles of Industry 4.0 per sector



Interestingly, there are no significant differences regarding company size or ownership. Digital illiteracy is not a problem for the machinery industry, but surprisingly, is marked as one of the major problems besides the IT and the food companies (see

Figure **15**). The lack of skilled labour is most afflicting the vehicle industry. Obsolete technologies primarily disrupt the food industry and the ICT sector – for the latter, it is most likely a factor limiting market expansion opportunities for its products and services.

CONCLUSION

It is generally well understood that industry was a fundamental driver of human development in the past two centuries. The three past phases of industrial development had their own influence on the spatial structure of economy and society, e.g. from coal-based heavy industrial areas, through an extreme concentration of resources for uniform mass production in large cities, to the globally organised production systems and value chains, that has culminated in the fierce competition of countries and regions. The expectations are similar in the case of the fourth stage, too. While having a decreasing general weight in the economic structure that has been a phenomenon typical within developed economies, the ever closer connection to the service sector suggests caution when degrading industry. At this point, researchers may only draw attention to potential scenarios based on current tendencies and scientific theories.

The continuously developing and ever more complex technologies, the production and logistic systems equipped with IT tools, the multi-site production generate some ever more

demanding new tasks for the companies. With the introduction of the IT solutions in an ever-expanding circle, the production and logistic processes, the labour organisation and customer service area undergo substantial changes. The access channels used by the customers and their habits diversify and move in the future more towards the services than the products. It will be possible to react quicker to the customer needs together with the economical and efficient mass production of customised products. The industrial production can be integrated into an intelligent environment that is called smart factory in the literature (Kagermann et al., 2013). When preparing for the future, the companies are forced to turn away from traditions both in their operation and acting role if they want to preserve their market position and competitiveness.

The triple helix model in its basic form is rather a tool of creating the innovative spatial economy than that of the governmental sector's specific development policies, although – as a force to generate one of the most efficient forms of cooperation in the innovation system – may bring essential contribution to their performance, too. The more so, as the success of the progress lies in the hands of the human resources, the development of which is of crucial importance. The cooperation between, and the geographical clusterization of the entities of the economic, academic and governmental spheres support the ever more accelerating innovations and then their diffusion, which is the foundation to increase competitiveness and thus is the token of progress (Etzkowitz & Leydesdorff, 1997; Porter, 1998). According to the best practice, the institutional foundation of the digital transformation of the industry is provided by the platform based model of the industrial ecosystem that determines the new patterns of cooperation between cultures, structures and systems of partnership, together with the management of the entire industrial ecosystem as the fundamental paradigm of Industry 4.0 development policy.

International experiences show that an ecosystem that enables the digital transformation of industry and the optimal harnessing of the synergies induced by the innovations assumes a sensitive and advanced inter-institutional cooperation culture (Roland Berger, 2015). Specifically, the implementation of the interactive institutional models that are to renew the system of the relationship network both in the private and public sectors and to ensure their efficient cooperation may be of immense positive impact.

In Hungary, where the weight of the manufacturing industry exceeds the European average, and specifically, the reinforcement policy of reindustrialization tendencies are embedded deeply in world economy, that affect mainly the vehicle industry and electronics, it is indispensable to formulate adequate and proactive responses to the new challenges of the fourth

industrial revolution. Industry 4.0 offers the opportunity to break out from the middle-range-income trap of semi-peripheral countries, but also incorporates the threat of falling away. Industry plays a prominent role in the regional development of each county, apart from the country's capital city (Lengyel, 2016). Thus, dealing with Industry 4.0 related issues is of utmost importance. In the analysis outlined in the article that was performed on the basis of territorial categories created on a topic-relevant sample by adhering to the logic of industry economics, though no extreme regional differences were encountered, but some observations worth to explore have been made.

The penetration of the innovations is typically promoted on the regional level, too, determined to a great extent by substantial foreign investments and an openness in the external economy. Moreover, it is correlated with the sectoral structure of the industry (see the dominance of machinery industry), too. The peripheral regions perform definitely weaker than those ahead of the others, while there is no evidence of a West-East polarization among the latter, which is partly explicable with structural factors.

The companies' satisfaction with the competencies of their workforce is nowhere good enough and is explicitly low in the periphery. In full conformity with these findings, the most painful obstacles to making progress in Industry 4.0 is digital literacy and the lack of the necessary skill. This defines one direction of how to advance in the future, i.e. that of the training and education. The focus should move from the lexical knowledge-oriented education to the competency developing education. Supporting lifelong learning and teaching the techniques of continuous adaptation are prerequisites for a successful participation in the competition, while the intention to facilitate integration may contribute to the mitigation of the current social and regional differences. With respect to the latter, valuable views are shared in the literature, both abroad and at home. Here, inter alia the publications of István Nahalka and Péter Radó may be referred to. The generally weak results in important aspects like human resources, R+D services and the obstacles to cope with, implicitly support the need for the ecosystem-based approach of regional development.

Apart from the emphasis on these differences, the general picture shows optimism about the future implying that, under appropriate circumstances, the companies are open for the changes to come.

SUMMARY

This paper aims to investigate the role of geographic regions in connection with the economic structure in the processes of the evolving fourth industrial revolution or, from another point of view, the regional effects

of the above-mentioned in Hungary. For this reason, some important consequences of the relevant economic literature were presented. The space forming forces and structure of the Hungarian industry were considered, explicating its post-socialist, semi-peripheral, dualistic characteristics, then discussed the territorial units used as the basis of the analysis.
After laying the theoretical foundations, the data from a questionnaire filled in by companies affected were examined from different some aspects, to ascertain their suitability and to have benchmarks for the analysis. The sample proved to be diverse according to size, ownership and different industry sectors. Examining relevant answers, one can find that sectoral differences are most well-marked (e.g. food industry usually shows to be far less technological progress- and digitization-oriented than machinery sector), being the most important element of regional dissimilarities, too. The biggest gap was between the least industrialized peripheral counties and the others possessing the highest quality of human resources. However, companies are dissatisfied with the competences of the labour force all over the country, which is one of the key issues to be tackled by the government policy. Additionally, evidences of externally driven innovation and a great discrepancy between completed and expected technological advancement were found, showing the contrast between the facts of how companies see the potential in Industry 4.0, and how they realise their compelling task of achieving still a lot to catch up.

Acknowledgement

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IMPACTS OF THE EU STRATEGY FOR THE DANUBE REGION (EUSDR) IN LIGHT OF TRANSPORT VOLUMES ON THE DANUBE RIVER

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Abstract

Although the EU Strategy for the Danube Region (EUSDR) is a macro-regional policy document of the European Union, it pays special attention to the development of the Danube, the river it is named after. In the field of transport, an EUSDR priority area (1a) is dedicated especially to waterways mobility, addressing mainly transportation on the Danube. One of the key targets is to increase cargo transport on the river by 20% by 2020 in relation to the base year of 2010. In recent years, there is growing interest in analyzing the implementation of EUSDR, but inland navigation related results are still under-researched. This paper aims to fill this gap by a late mid-term evaluation of EUSDR's impact in inland waterway transport on the Danube. Therefore, projects in line with EUSDR are reviewed in order to understand the commitment and efforts of countries. On this basis, data on freight transport volumes are compared. The analysis focuses not only on single countries but also on three (Upper, Middle, and Lower) sections of the river to reveal regional characteristics and differences. Findings indicate that the expected increase of transport volumes on the Danube is not being achieved, as transport volumes declined from 2010 to 2017.

Keywords: EUSDR, Danube, inland waterway transport

INTRODUCTION

For a long time, utilization of the Danube River as a waterway lagged behind opportunities. The main reason was political fragmentation, since the river passed through borders of cultures and empires. There was no chance for the establishment of a single economic area in its catchment basin when Danube riparian countries started to develop, transportation needs quickly increased, and the largest competitor, namely railways, appeared in the 19th century. As a result of efficient waterway development and transportation needs of heavy industry emerged by Soviet imperial interests along the Danube, inland waterway transport (IWT) burgeoned in the second part of the 20th century (Hardi 2012).

Waterway infrastructure and maintenance are crucial for inland navigation. Both require large financial resources; furthermore, financing of management and maintenance (of both waterway infrastructure and ports) are often separated, thus coordination is a key issue (Beyer 2018). The international character of the Danube makes waterway management even more complicated, which requires cooperation of all the riparian states. Some other factors, such as climate change, economic constraints and policy also have a large influence on the IWT sector.

The European Union is promoting the development and expansion of the IWT (and rail) sector to increase its modal share and subsequently reduce air and noise pollution and optimise land use by road transport. The EU Strategy for the Danube Region (EUSDR) defined the target of increasing cargo transport on the Danube River by 20% by 2020 in relation to the base year of 2010. Further aim of EUSDR was to increase physical capacity of the Danube by removing bottlenecks to accommodate pushed convoys and vessels with a draught of up to 2.5 meters (VIb type vessels according to UNECE's international classification) all year round by 2015 (subsequently rescheduled for 2020). To achieve these aims, infrastructure development of the waterway and ports, as well as modernisation of navigation and IT systems were foreseen.

The macro-regional strategy has been implemented; developments of different scales have been concluded or are still ongoing on both national and transnational level. By the analysis of statistical data on country and regional level along the Danube, this paper addresses the impacts of EU co-funded and national projects on IWT. Some research questions are as follows:

- Are there national or regional (i. e. country or river section related) characteristics in terms of investment volumes and project objectives in line with priority area 1a (Waterways Mobility) of EUSDR?
- Are there clear differences among groups of countries of the three sections (geographical regions) of the Danube in terms of IWT indicators?
- Are EUSDR's ambitious aims achievable and which are the key barriers?
- Are targets of EUSDR being achieved along the entire river and in each of its three sections?

To set the scene, first a literature review is provided, and then methodology is described. EUSDR projects are studied in general and by two key issues (bottlenecks and transport volumes) in the Results section. Finally, the findings are highlighted.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

There are relevant differences in the Danube Region in terms of socioeconomic status. Indicators of *Germany* and *Austria* (Upper section) are significantly better (Müller & Hannes 2015, Erdősi et al 2013): GDP related indicators clearly show better perfomances in these countries. Among others, foreign direct investment as a percentage of GDP is much higher in EU member states of the Middle (*Slovakia, Hungary, Croatia,* and Serbia; EU member states in italics), and Lower section (*Bulgaria* and *Romania*).

Priority area 1 of EUSDR intends to develop road, rail, air, and inland waterway transport in order "To Improve Mobility and Multimodality". Although the macro-region has quite good accessibility indicators, the average value of 68 of the Logistics Performance Index (LPI) justifies the need for action (Rafaelsen et al. 2017). There are relatively large differences among countries; LPIs in the Upper (138–150), Middle (81–86), and Lower section (51–60) illustrate diversity. In the Lower section, especially in Romania, the lack of high level road infrastructure increases the importance of inland navigation and the role of intermodal links (Ţarţavulea, Belu, & Paraschiv, 2011).

According to the EU Transport Scoreboard, the TEN-T inland waterways' core network was completed in nearly all member states by the end of 2016, when only Croatia (33%) and Romania (91%) had incomplete elements. (In the case of Croatia, other waterways, especially the Sava and Drava rivers also relevantly count here.) However, a detailed study of the IWT sector –such as navigable days, competitiveness, and performances of cargo transport– would show quite a different (and less positive) picture. Connected waterways and multimodal links of the TEN-T network are subjects to further development as well.

By review of the literature, it may be concluded that impacts of the EU Strategy for the Danube Region have not yet been extensively studied. Besides some indirectly related sectoral analyses (e. g. Ignjatijević, Milojević, Cvijanović, & Jandrić, 2015), only a few reports or articles focus on general outcomes. A study by Bettina and Hannes (2015) addresses future potentials, needs, and socioeconomic challenges of the Danube Region. A discussion paper by Chilla and Sielker (2016) raise questions about monitoring, evaluation and added value of EUSDR. Sielker (2016) aims to understand new drivers of cooperation and multi-level governance by EUSDR stakeholders' perspectives. Ngampramuan (2018) studies EUSDR's contribution on regional and sub-regional, as well as further territorial (local, provincial,

national) levels. A discussion paper by Gál, Lux, and Illés (2013) provides a comprehensive analysis of the Danube Region and structured information to understand territorial specificities. Regional differences, comparing countries of the three (Upper, Middle, and Lower/Under) sections of the Danube River at the moment of implementation of EUSDR are illustrated by the findings in terms of unemployment rates, higher education degrees, and research and innovation spending per capita, by Czakó, Fekete, and Poreisz (2014).

As most European countries have no interest in the IWT industry at all, inland navigation is an under-researched field of transport. Thus, the number of recent articles about shipping even on the Danube is low, focusing mainly on river engineering and the burning issue of navigability (e. g. Beuthe et al. 2014, Habersack et al. 2016, Glock et al. 2019). However, there are some scientific publications which address current navigation challenges and potentials in the Danube macro-region. For instance, two articles consider the steps to be taken for the promotion of IWT at the moment of implementation of EUSDR: 1) Mihic, Golusin, and Mihajlovic (2011) present measures to stimulate sustainable development in the Danube Region on the basis of previous research findings and regulatory documents; and 2) Radmilović and Maraš (2011) map the advantages and disadvantages of inland navigation to provide a general overview of the (sub-)sector and its future in the Danube Region. A recent study by Pfoser, Jung, and Putz (2018) reviews administrative barriers delimitating economic and environmental potentials of IWT on the Danube. They conclude that stakeholders from all involved countries report on similar types of barriers, thus standardization, harmonization, and digitization may remove or reduce many impacts of the revealed problems.

DATA AND METHODS

This paper focuses on priority area 1 of EUSDR, especially 1a (Waterways Mobility) to evaluate the achievement of targets, namely:

- Increase cargo transport on the river by 20% by 2020 compared to 2010;
- Solve obstacles to navigability, taking into account the specific characteristics of each section of the Danube and its navigable tributaries and establish effective waterway infrastructure management by 2020.

Data are from the period 2010 to 2017, including some previous data on navigation. Bearing in mind that ongoing and recently completed projects will have effective results in the long term, primarily the related efforts are analysed.

Geographical scope of the study is the set of Danube riparian states. Taking into account the availability of data, national (country) level is analysed in all but one case: for Germany, data by the Bavarian statistical office is considered. Other data are from Eurostat and the European Commission's Statistical pocketbook 2018 (for EU member states), as well as the website of the Statistical Office for the Republic of Serbia (for non-member Serbia, indeed). Information about IWT projects has been gathered from the official website of EUSDR priority area 1a (www.danube-navigation.eu, last access on 31/3/2019).

A key aspect of this research is the evaluation of performances in the three Danube sections, thus groups of countries have been formed accordingly. *Germany* and *Austria* are countries of the Upper; *Slovakia*, *Hungary*, *Croatia*, and Serbia of the Middle; and *Romania* and *Bulgaria* of the Lower section (this last one includes the Danube–Black Sea Canal as well). Moldova and Ukraine are also Danube riparian states but, taking into consideration the lack of large scale investments in line with EUSDR, both countries are omitted in this study. (EU member states are in italics.)

In terms of developments, priority has been given to country-related projects, as these may be linked directly to states and subsequently river sections. Infrastructure investments are carried out mainly on a national level, thus commitment, motivation and efforts of single countries may also be evaluated by their analyses.

EUSDR coordinators initiated and labelled *strategic projects,* i.e. projects with high impact and visibility for the strategy in 2014 (see the list of strategic projects in Tab.1, in bold). These projects are analysed to the same extent as other initiatives in this paper.

Transport, neighbourhood and regional policy, as well as politics seem to be crucial for IWT development in this region, especially for sections where the Danube is a border river. There, bilateral cooperation is indispensable and some long held debates may hinder effective IWT developments. The border dispute between Croatia and Serbia or the dispute over the Gabčíkovo–Nagymaros dams between Slovakia and Hungary are the most relevant cases. However, politics and policy issues are ignored in the present study.

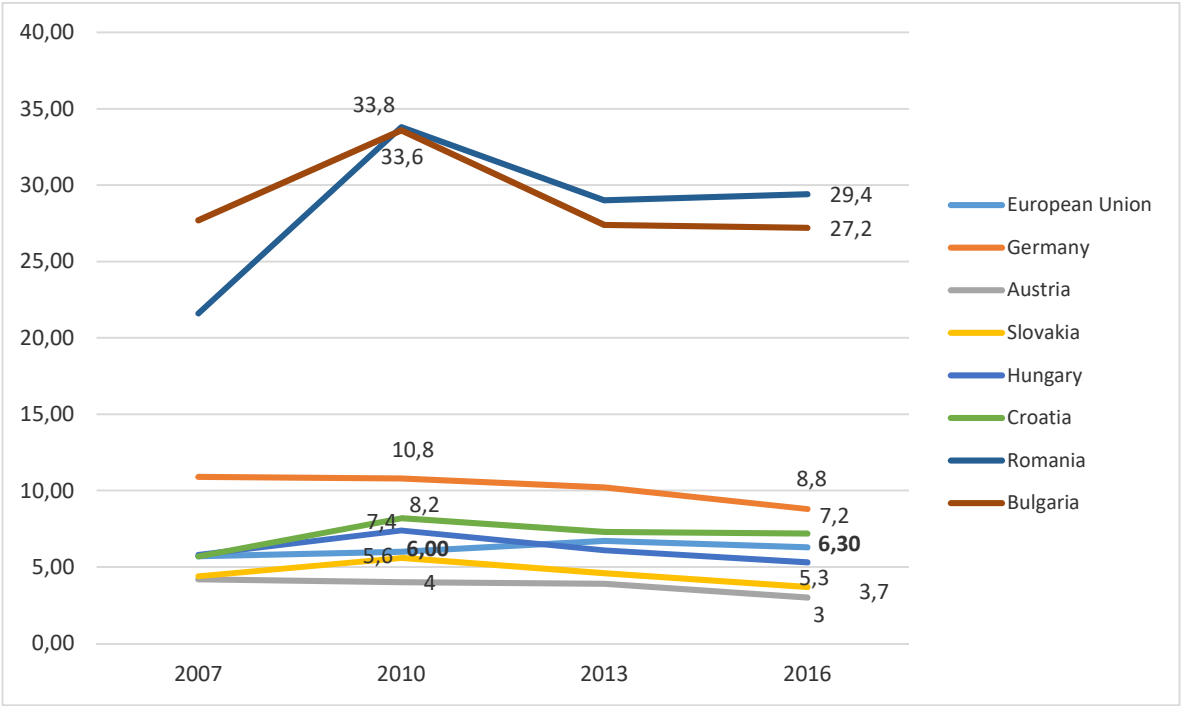
RESULTS

Projects are analysed in three topics here: general aspects, navigability bottlenecks, and cargo transport on the Danube.

General evaluation of IWT related projects in line with EUSDR

Increasing cargo transport by 20%, defined by environmental, sustainability and competitiveness considerations, seems to be a rather ambitious target, as it challenges the current trends of the transportation market, namely growing volumes and share of road transport. Modal share of IWT in all countries has been decreasing or remained unchanged from 2010 to 2015 (Fig. 1).

Figure 1 Modal share of IWT in Danube riparian EU member states

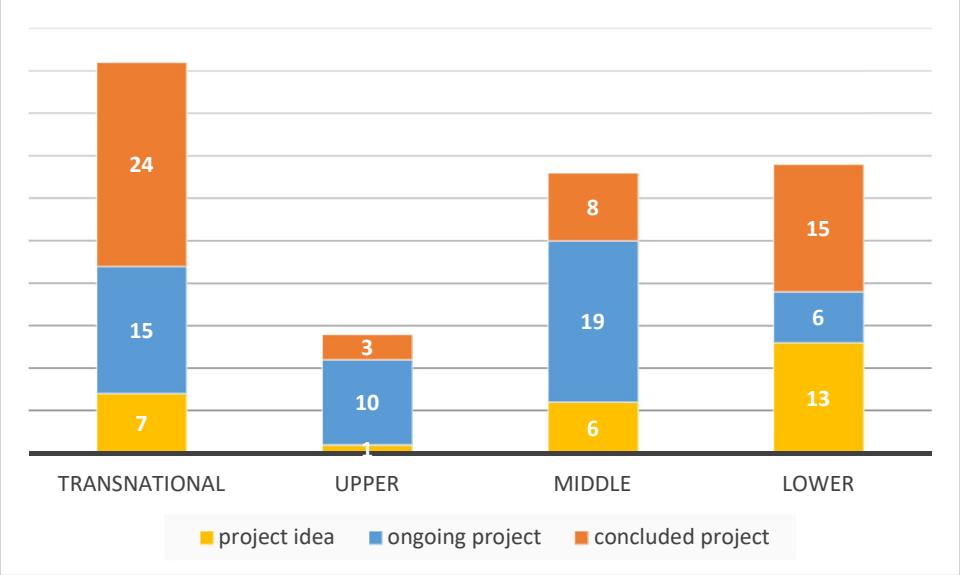


Source: own edition, data: Eurostat

Taking this into account, large scale and smart investments seem to be necessary to increase competitiveness of the IWT sector. Focusing on planned, ongoing and completed projects only by river sections, unbalanced distribution may be observed. (Project ideas are proposals in line with EUSDR, most of which did not succeed in earning co-financing in previous calls of EU programmes.) In 2019, approaching the end of the 7-year EU programming period (2014–

2020), there are many completed projects, especially on a transnational level. Most projects are still ongoing in the Middle and Upper sections (Fig. 2). Some key investments in the latter are financed by national means and will still last for a long time (e.g. lock reconstructions in the Main-Danube Canal). In the Lower section, there are many more completed than ongoing projects.

Figure 2 Number of IWT projects in line with EUSDR, by river section



Source: own edition, data: danube-navigation.eu (last access: 31/3/2019)

The main purpose of transnational projects is to strengthen cooperation through borders among organisations of national and local character, NGOs and companies. In this set of projects, research and consultancy type projects are overrepresented. Although there are project leaders from most Danube riparian countries (Tab. 1), Austria has a dominant role, especially due to key organizations (via donau, Pro Danube International) and its efforts in integrating others. Projects led by Austrian companies are based on wide scale partnerships, including a good number of organisations from (in a good number of cases, nearly all) the riparian states. As the Danube is not the only large navigable waterway and only one part of the country is included in the EUSDR initiatives, Germany has fewer projects as project leader. On the contrary, Romania is more active than others, e.g. Hungary or Slovakia. Thus, on the level of river sections, the Upper and Lower sections seem to have more affinity for project leadership.

Table 1 Transnational projects in line with EUSDR by the end of 2018

Project name (or *brief description in italic),* **EUSDR strategic projects in bold**	*Project Lead*	*Term*	*Budget M EUR*	*Status*
CO-WANDA *(convention for waste management, follow-up of WANDA)*	AT	2012-2014	1.82	✓
DaHar - Danube Inland Harbour Development	HU	2011-2014	1.97	✓
DANTE - Improving Administrative Procedures and Processes for Danube IWT	AT	2017-2019	1.98	↺
Danube SKILLS *(increase institutional capacity by boosting competences)*	RO	2017-2020	2.02	↺
Danube Stream - Smart, Integrated And Harmonized Waterway Management	AT	2017-2019	2.11	↺
DAPhNE – Danube Ports Network	AT	2017-2019	2.99	↺
DBS Gateway Region *(transnational multi-port gateway region)*	AT	2017-2019	2.18	↺
Development of Transport and Navigation on the Sava River Waterway	HR	2008-	85	↺
DREAM - Danube River Research And Management	AT	2012-2020	69.6	↺
ECCONET - Effects of Climate Change on the Inland Waterway Networks	BE	2010-2012	2.26	✓
Energy Barge - Building A Green Energy And Logistics Belt	DE	2017-2019	2.32	↺
EWENT - Extreme Weather Impacts On European Networks Of Transport	FIN	2009-2012	1.92	✓
FAIRway Danube *(deployment of a fairway maintenance master plan)*	AT	2015-2020	23.4	↺
FAST DANUBE *(technical assistance for a feasibility study)*	RO	2014-2018	5.25	✓
Green Danube *(integrated transnational policies and practical solutions)*	RO	2017-2019	1.59	↺
GRENDEL - Green and Efficient Danube Fleet	AT	2018-2020	1.83	↺
High-Performance Green Port Giurgiu	RO	2013-2015	0.66	✓
HINT *(harmonized IWT through education and information technology)*	RO	2012-2014	1.54	✓
Innovative Danube Vessel	AT	2012-2013	0.29	✓
INWAPO - Upgrading Of Inland Waterway And Sea Ports	IT	2011-2014	3.81	✓
IRIS Europe II – Implementation Of River Information Services In Europe	AT	2009-2011	11.63	✓
IRIS Europe 3 – Implementation of River Information Services in Europe	AT	2012-2014	10.46	✓
LNG Masterplan for Rhine-Main-Danube	AT	2013-2015	20.48	✓
Move It! - Modernisation Of Vessels For Inland Waterway Freight Transport	NL	2011-2014	3.96	✓
MreNa - Feasibility Study: Morava River - Recreational Navigation	SK	2012-2014	0.23	✓
NELI *(cooperation network for logistics and nautical education)*	RO	2009-2012	2.17	✓
NEWADA - Network Of Danube Waterway Administrations	AT	2009-2012	2.86	✓
NEWADA Duo *(data and user orientation of the waterway administration network)*	AT	2012-2014	2.24	✓
NEWS *(next generation European inland waterway ship and logistics system)*	AT	2012-2015	2.21	✓
PlasticFreeDanube – Macro Plastic Waste in and along the Danube	AT	2017-2020	1.5	↺
PLATINA - Platform for the Implementation of NAIADES	AT	2008-2012	8.79	✓
PLATINA II - Platform for the Implementation of NAIADES	AT	2013-2016	2	✓
PROMINENT - Promoting Innovation In The Inland Waterways Transport Sector	NL	2015-2018	6.58	✓
RIS COMEX - RIS Corridor Management Execution	AT	2016-2020	26.5	↺
RISING *(RIS services for improving the integration of IWT into intermodal chains)*	DE	2009-2012	7.52	✓
SEE Mariner *(system for monitoring the transportation of dangerous goods)*	GR	2011-2013	2.19	✓
SuperGreen *(supporting EU's Freight transport logistics action plan…)*	GRE	2010-2013	3.45	✓
SWIM - Smart Waterway Integrated Management	RO	2016-2020	12.22	↺
WANDA - Waste Management For Inland Navigation On The Danube	AT	2009-2012	1.67	✓

✓ = concluded; ↺ = ongoing

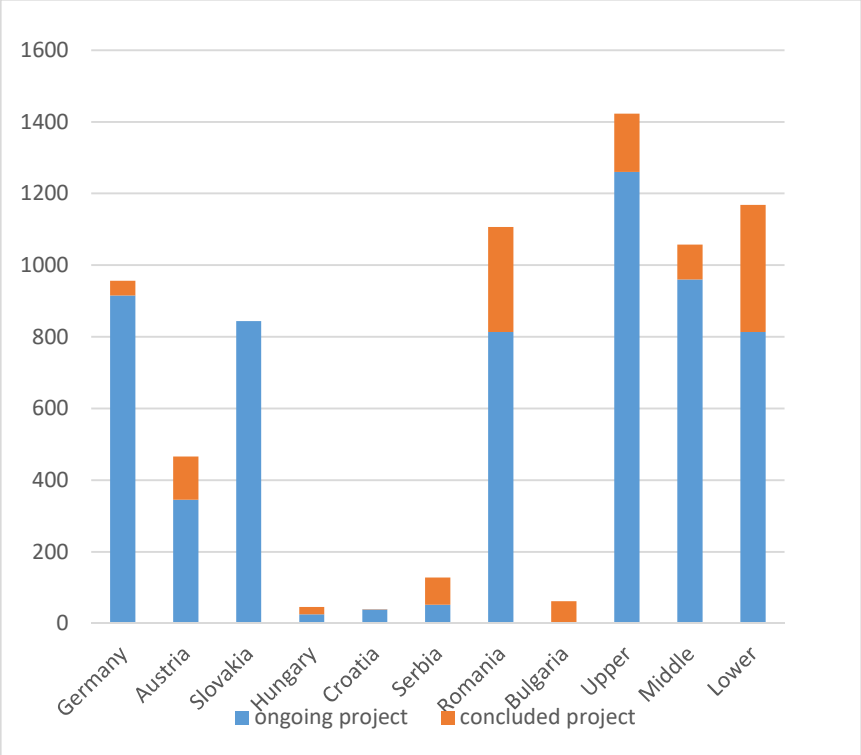
Source: own edition, data: danube-navigation.eu (last access: 31/3/2019)

Taking into account national projects on a country level, Romania is the most active. Its activity is outstanding especially in light of the low number of projects in the other country of the Lower Section, Bulgaria. The Upper section is also unbalanced, as Germany carried or is carrying out more projects than neighbouring Austria. However, as it has already been stated, Austria is much more active in transnational cooperation. The number of developments is more balanced in the Middle section countries.

Differences seem to be less relevant in terms of project budget than in the number of projects. There are large scale investments on the Upper section with national financial resources and contributions by the market. Total budget of projects in general and of completed projects is the lowest in the Middle section. The highest amounts have been allocated to investments in the Lower section, and projects are still ongoing there in the amount of approximately 800 million EUR. On country level, amounts dedicated to IWT projects are high in Romania, Germany, and –due to the construction of an LNG terminal for 686.8 million EUR between 2017 and 2020– Slovakia. In Austria, the relatively low number of projects are realised by large budgets.

Figure 3 illustrates that, in spite of a balanced distribution of financial resources for IWT projects on the level of river sections, the picture is different on the level of countries of a certain section. It seems that countries like Bulgaria and Hungary, i.e. two member states that joined the EU well before the implementation of EUSDR (in 2004), did not make all the necessary efforts to find or did not succeed in achieving (co-)financing for IWT investments in line with the strategy. Croatia became an EU member state in 2013, thus it had a special situation in the early years of the macro-regional strategy.

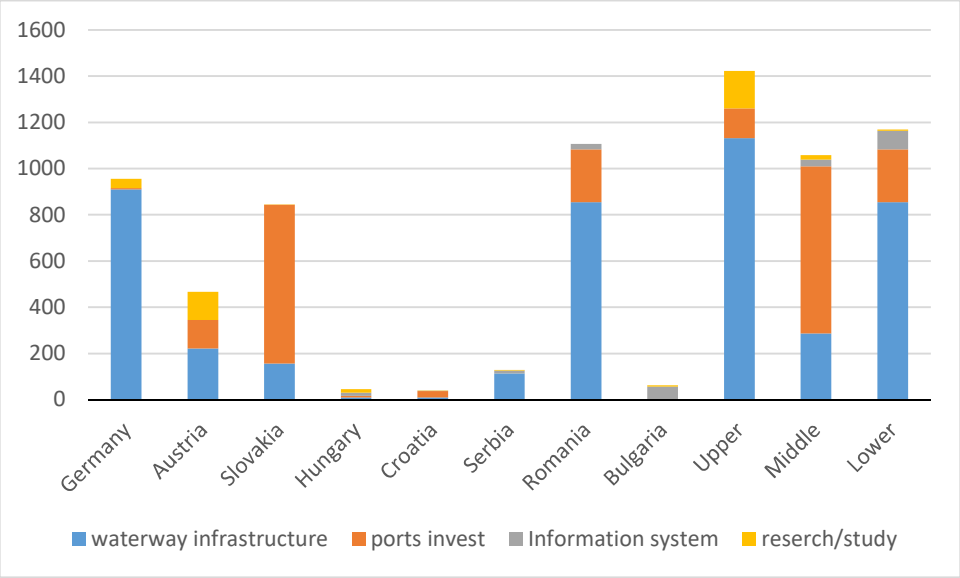
Figure 3 Budget of IWT projects in line with EUSDR by the end of 2018



Source: own edition, data: danube-navigation.eu (last access: 31/3/2019)

Project goals of the dedicated budget have also been analysed (Fig. 4). The elaboration of studies and development of information systems logically have smaller budgets than waterway and port infrastructure projects. In the Middle section, more money is allocated to port development (especially due to the distortion effect by the above mentioned large scale LNG terminal project in Slovakia). In the Upper and Lower sections, the traditionally expensive waterway infrastructure investments earned large financial resources. In other words, the Middle section, where navigability problems are critical, minimal budgets have been spent for waterway development and maintenance. Furthermore, relatively low amounts of money are dedicated to research and preparatory studies on a national level in the Middle and Lower sections, which may hinter the implementation of large-scale projects in the near future there. It is questionable if the participation in international and transnational projects could replace the elaboration of specific national strategies, action plans, and other (e.g. research) documents.

Figure 4 Budget of IWT projects in line with EUSDR by goal, per country and per section, by the end of 2018

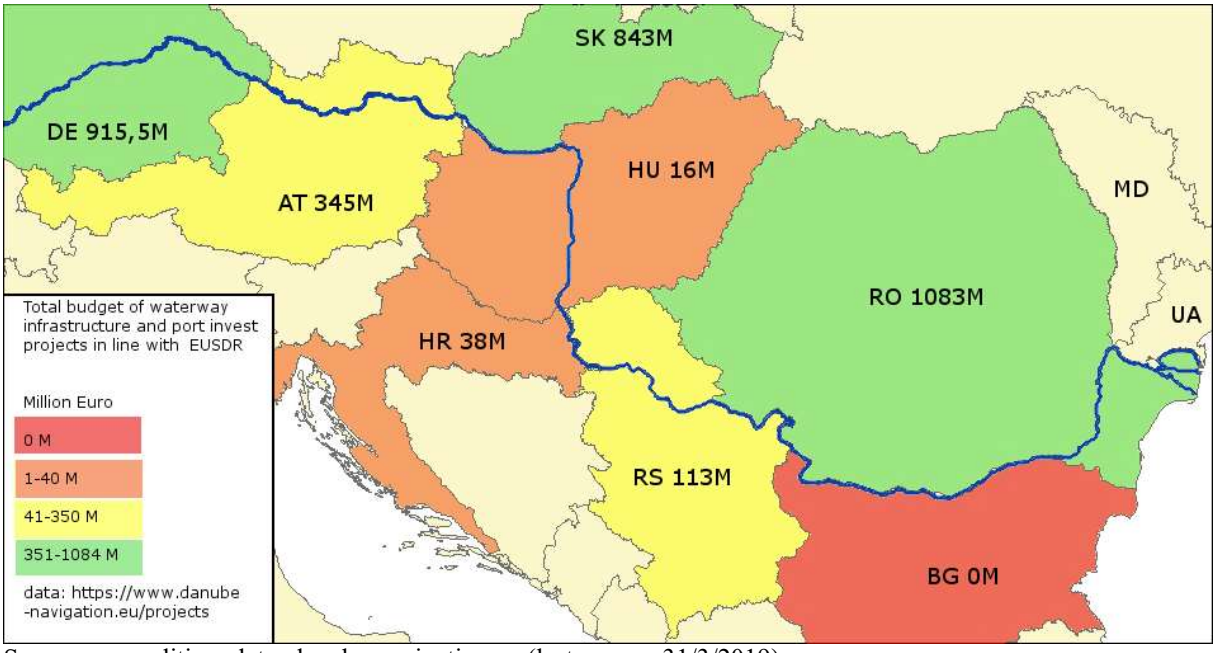


Source: own edition, data: danube-navigation.eu (last access: 31/3/2019)

On a country level, some further specalities may be observed. Bulgaria dedicates most of its modest budget to information system projects. Hungary and Croatia, both with a low number of projects in total, spend almost nothing for waterway development. In Slovakia and Romania, the proportion of research is quite low. Nevertheless, Austria spends nearly the same (relatively good) amount of money for waterway development, research, and port investments. Furthermore, its participation in international cooperation is also mainly related to "soft" projects.

Despite the inevitable role of research and preparatory studies and the development of information systems, navigability targets may be achieved primarily by investment projects. Countries allocate their budgets to physical interventions on different scales. As river section related common points have not been identified in this term, Fig. 5 shows four groups of countries, according to the amount of money dedicated to investments.

Figure 5 Total budget of waterway infrastructure and port investment projects in line with EUSDR (in million EUR)



Source: own edition, data: danube-navigation.eu (last access: 31/3/2019)

In Germany, the reconstruction of locks helps further development of the Danube-Main Canal. Multimodal port enhancement and large scale river engineering projects are being carried out in Austria. Construction of an LNG terminal in the public port of Bratislava makes Slovakia one of the largest port investors of the region in the frame of EUSDR. A comprehensive development programme is realised by Romania to improve its waterways and ports, giving priority to the Danube–Black Sea Canal and the port of Constanţa. In Serbia, the construction of a new bridge in place of the destroyed Žeželj Bridge in Novi Sad (completed in 2018) and upgrade of the Iron Gate I navigational lock are the projects with the largest budgets. In Hungary and Croatia, small scale interventions in waterway infrastructure and minor port developments are being done. According to this database (see Tab. 2), Bulgaria has not carried out waterway infrastructure or port investment projects. However, in 2014-2015, in line with the LNG Masterplan for Rhine-Main-Danube by the European Commission (2012), an LNG terminal with a capacity of 1000 m^3 has been built in the Port of Ruse.

Table 2 Waterway infrastructure and port invest projects in line with EUSDR by the end of 2018

Project name (or *brief description in italic*)	*Type*	*Country*	*Term*	*Budget*	*Status*
Overhaul of Kachlet	Waterway	DE	2012-2019	86	↻
Reconstruction of the Erlangen Lock	Waterway	DE	2015-2025	203	↻
Reconstruction of the Kriegenbrunn Lock	Waterway	DE	2015-2024	210	↻
Reconstruction of the Obernau Lock	Waterway	DE	2015-2030	120	↻
Upgrade Of The Danube Between Straubing And Vilshofen	Waterway	DE	2015-	208	↻
Deepening of the Fairway of the Lower Main	Waterway	DE	2015-	28	↻
Deepening of the Fairway of the Upper Main	Waterway	DE	2000-2020	55	↻
Core Network Port Regensburg – Improving Accessibility	Port	DE	2016-2018	5.48	↻
Trimodal Linz Port – Rail Connection and Port Enhancement	Port	AT	2017-2023	122.9	↻
Integrated River Engineering Project	Waterway	AT	2005-2030	222	↻
Construction of the LNG Terminal in the Public Port of Bratislava	Port	SK	2017-2020	686.8	↻
DaReM - Danube Rehabilitation Measures	Waterway	SK	2017-2020	9.75	↻
Upgrade of Gabčíkovo Locks	Waterway	SK	2016-2020	146.6	↻
PAN-LNG-4-DANUBE	Port	HU	2016-2019	7.01	↻
HUMARK (*improving fairway marking system in Hungary)*	Waterway	HU	2015-2020	8.92	↻
Slavonski Brod Port Infrastructure Construction and Upgrade	Port	HR	2017-2020	11.68	↻
Construction of Bulk Cargo Terminal in the Port of Osijek	Port	HR	2017-2021	17.31	↻
International Ship Winter Shelter on the Danube in Croatia	Waterway	HR	2011-2020	4,1	↻
Rehabilitation of the Right Bank of the Danube River at km 1,322	Waterway	HR	2011-2020	4,8	↻
Rehabilitation of the Critical Sectors on the Sava River	Waterway	RS	2017-2020	7	↻
Rehabilitation and Upgrade of the Iron Gate I Navigational Lock	Waterway	RS	2017-2020	28.51	↻
River training and dredging works on critical sectors of the Danube	Waterway	RS	2017-2020	14.1	↻
Construction of New Žeželj Bridge in Novi Sad	Waterway	RS	2011-2018	60	✓
Removal of unexploded ordnance (UXO) from the Danube river	Waterway	RS	2010-2012	3.48	✓
PROTECT (*upgrade of infrastructure in Constanța Port)*	Port	RO	2016-2019	12.7	↻
Rehabilitation of locks on the Danube-Black Sea Canal	Waterway	RO	2013-2019	348.3	↻
High Performance Green Port Giurgiu Stage II - Construction	Port	RO	2015-2019	15.59	↻
Banks Consolidation in the Poarta Alba-Midia Navodari Canal	Waterway	RO	2014-2025	309.2	↻
Improving navigation conditions on the Danube (rkm 375–175)	Waterway	RO	2011-	47.84	↻
Banks Protection on the Sulina Canal	Waterway	RO	2004-	80	↻
Rehabilitation and development of the Oltenița Port infrastructure	Port	RO	2012-2016	4.81	✓
Completion of the North Breakwater in the Constanța Port	Port	RO	2011-2015	175	✓
Road bridge at km 0+540 of the Danube–Black Sea Canal	Waterway	RO	2010-2016	49.43	✓
Development of the railways capacity in the port of Constanța	Port	RO	2012-2015	17.5	✓
Ship-generated waste collection and processing system	Waterway	RO	2012-2015	9.54	✓
CODENAV *(ship waste management in the maritime Danube ports)*	Waterway	RO	2010-2013	10	✓
Dismantling/remaking of pushed convoys	Port	RO	2012-2014	3.5	✓

✓ = concluded; ↻ = ongoing

Source: own edition, data: danube-navigation.eu (last access: 31/3/2019)

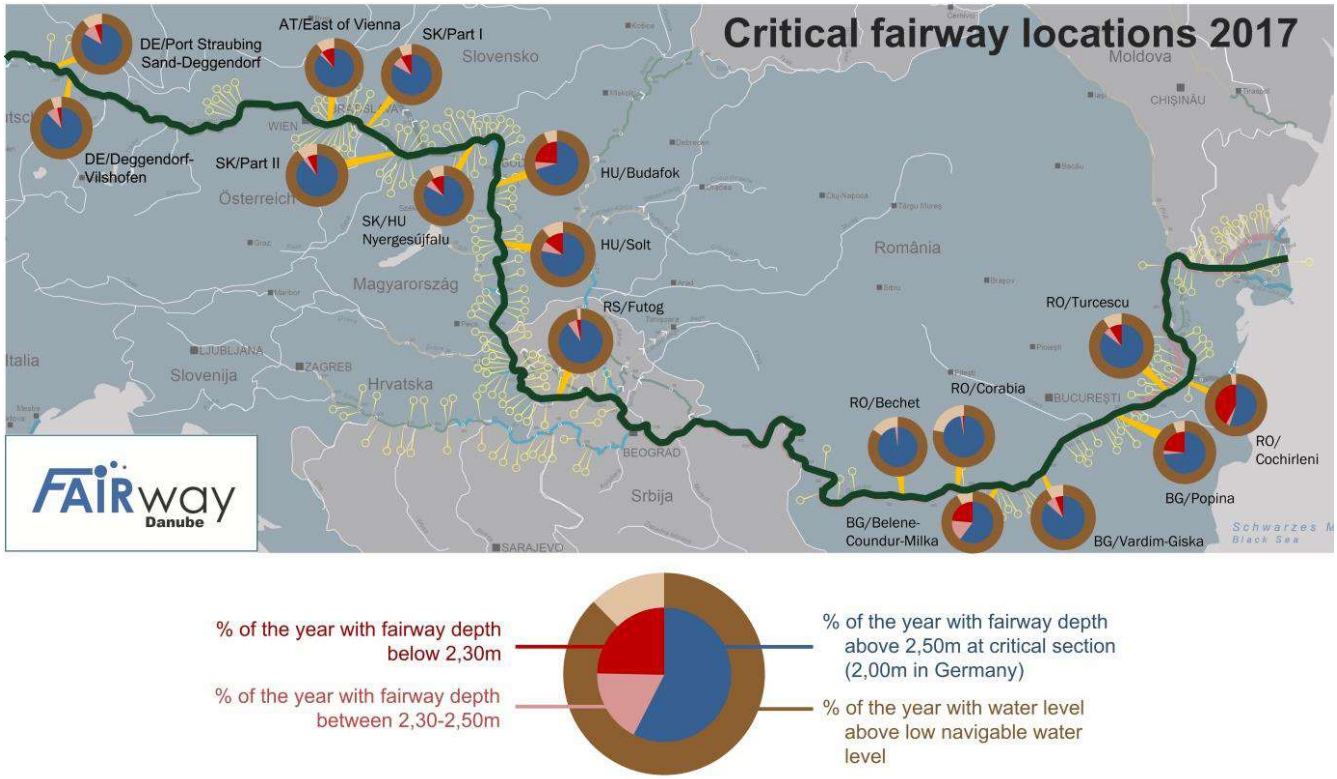
Navigability bottlenecks

Solving obstacles to ensure navigability all year round is difficult due to the constantly changing formation of the riverbed. In addition to large engineering projects, maintenance of river facilities, riverbed monitoring, and dredging are all necessary. Although works may also form

a barrier to navigation, floods, iceing, and low water levels are the main obstacles. Low water is the most challenging, as it may last for a long time and it cannot be solved by quick technical interventions.

Draughts below 2.5 meters cause reduced freight capacity for larger vessels. On some critical river sections, this is a recurrent bottleneck (Figure 6). Fairway conditions and progress of developments are monitored by FAIRway Danube (EUSDR strategic project, 2015–2020) several times per year. The report of October 2018 underlines that Croatia, Romania, and Bulgaria have satisfied more than half of the national investment needs declared in 2014 (bmvit and via donau 2018b). The report for the complete year of 2017 has identified 20 main critical sections where the recommended draught of 2.5 metres at low navigable water level was not achieved. Water levels started to decrease in June in both the Middle and Lower sections, and this led to unfavourable fairway conditions during the entire summer period. Besides weather conditions, this is due to insufficient waterway maintenance or interventions. The most critical location was Cochirleni in Romania, where the minimum depth was not achieved from July to October in 2017. Although the same data for 2018 was not available by the finalisation of this manuscript, it is well-known that fairway conditions were less favourable in 2018 compared to previous years, which led to temporary closures of navigation on all sections of the Danube.

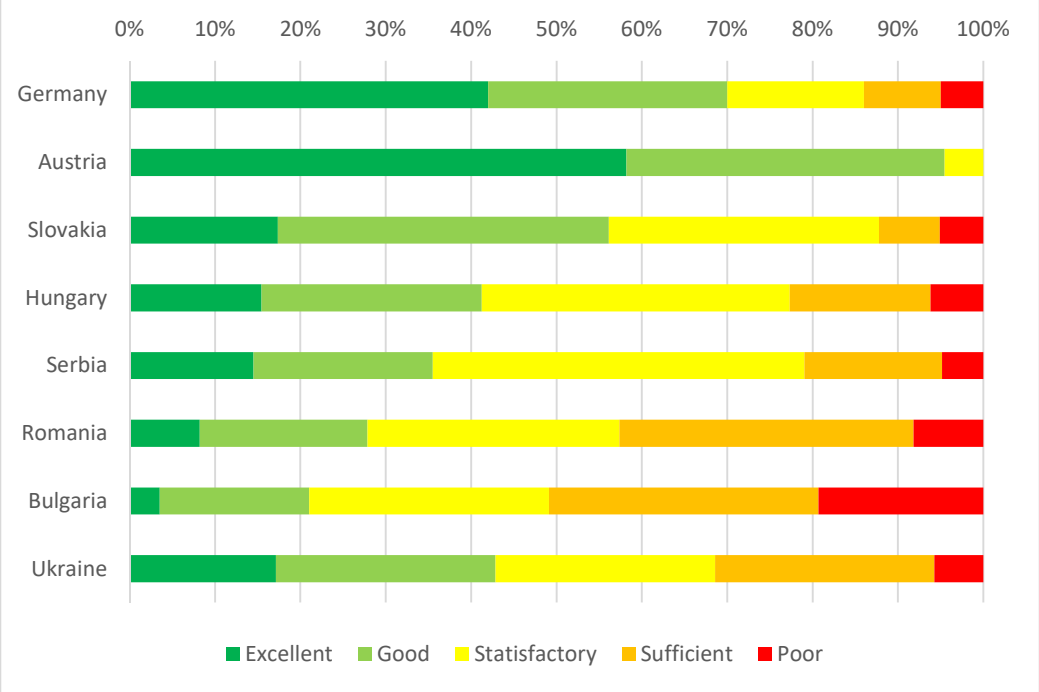
Figure 6 Critical fairway locations 2017



Source: bmvit & via donau (2018a), p. 18

The quality of waterway infrastructure is crucial for the IWT sector. The Austrian waterway company (via donau) carried out a survey in December 2017 to evaluate maintenance activities upon feedbacks by ship captains, ship owners, and others in the industry (in total, 114 respondents). Outcomes show the need for improvement explicitly. On the Upper section, more than 70% (in Austria, more than 90%) of respondents evaluated maintenance activities as excellent or good. In the Middle section, this is near 50%, and in the Lower section, only approximately 25% (via donau 2018).

Figure 7 Water infrastructure quality in the Danube countries in 2017



Source: own edition, data: via donau

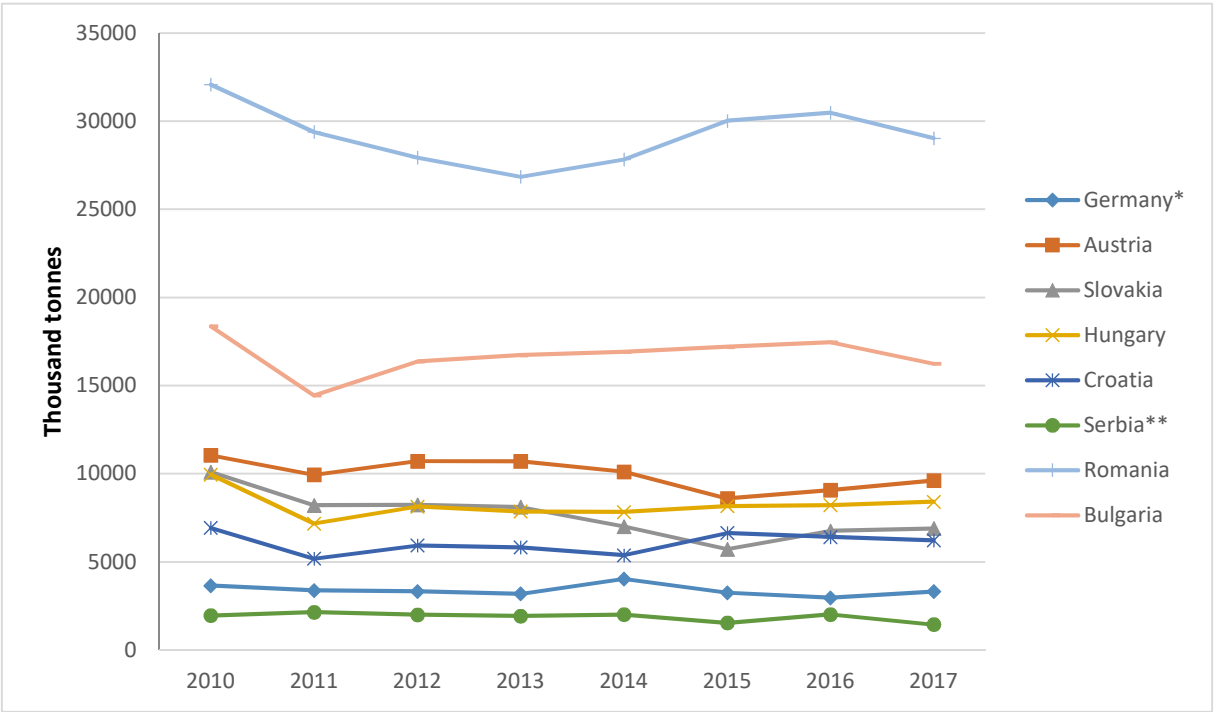
Volume of cargo transport on the Danube

As stated above, freight transport on the Danube was relevant in the 1980s. By that time, some key infrastructure investmens had been done and a large fleet of vessels was in operation on the fairway. The Danube played a key role in the foreign trade of socialist countries, where economic and political frameworks allowed the provision of industrial towns along the Danube with cheap raw materials from the Black Sea.

The dissolution of the Soviet Union and subsequent economic recession in Eastern Europe, as well as new political trends and wars largely affected the IWT sector. New transportation needs to and from Western Europe, and the development of the related Trans-European rail and road networks led to the reduction of the market of inland navigation and put it into a worsening

position. The current status of IWT is the result of a decline after the global financial and European debt crisis. Transport volumes hit bottom in 2011 and thereafter they are stagnating (Fig. 8); by 2017, none of the Danube riparian states could exceed freight transport volumes of 2010. The largest traffic is in Romania and freight transport volumes are significant in Bulgaria as well. The latter is true –in spite of rather poor IWT infrastructure quality (see Fig. 7)– thanks to the relative proximity of the Black Sea, relevance of domestic and transit transport, as well as shortcomings of land transport infrastructures and connections. In Austria, Slovakia, Hungary, and Croatia, 5 to 10 thousand tonnes are forwarded yearly, and there have been no relevant changes in the analysed years. The lowest volumes are transported on the Danube in Germany and Serbia.

Figure 8 Goods transport by inland waterways per country in 2010–2017



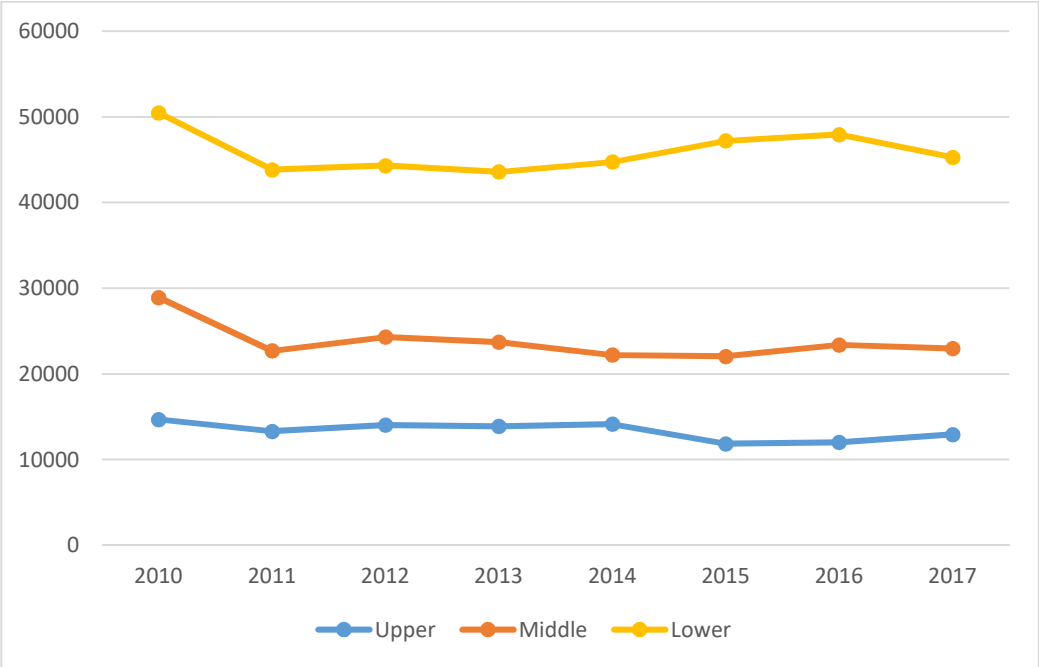
* Bavaria, data: www.statistik.bayern.de

** Serbia, data: www.stat.gov.rs

Source: own edition, data: Eurostat, BSV, stat.gov.rs

On the level of river sections (Figure 9), the Lower region is dominant, due to direct link to the sea, the operation of sea and sea-river ports and needs for domestic freight transport on the Danube. On the Middle section, export, import, and transit are relevant. Austrian raw material needs are prevalent in the Upper region.

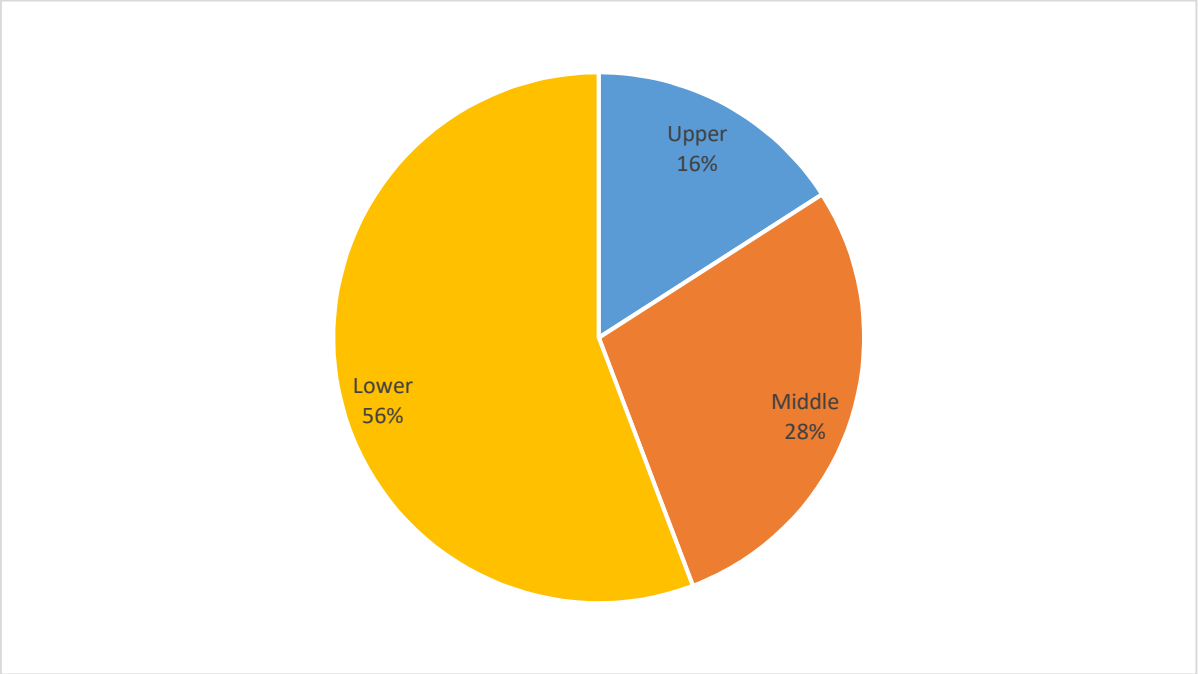
Figure 9 Freight transport per Danube section (in thousand tonnes) in 2010–2017



Source: own edition, data: Eurostat, BSV, stat.gov.rs

More than half of the freight transport on the Danube (in tonnes transported) are attached to the Lower section. Transport volumes show particular proportions in this comparison (Fig. 9): the Lower section compares to the total volumes like the Middle section to the Lower; performances of the Upper section are nearly the same – approximately half – in relation to the Middle section.

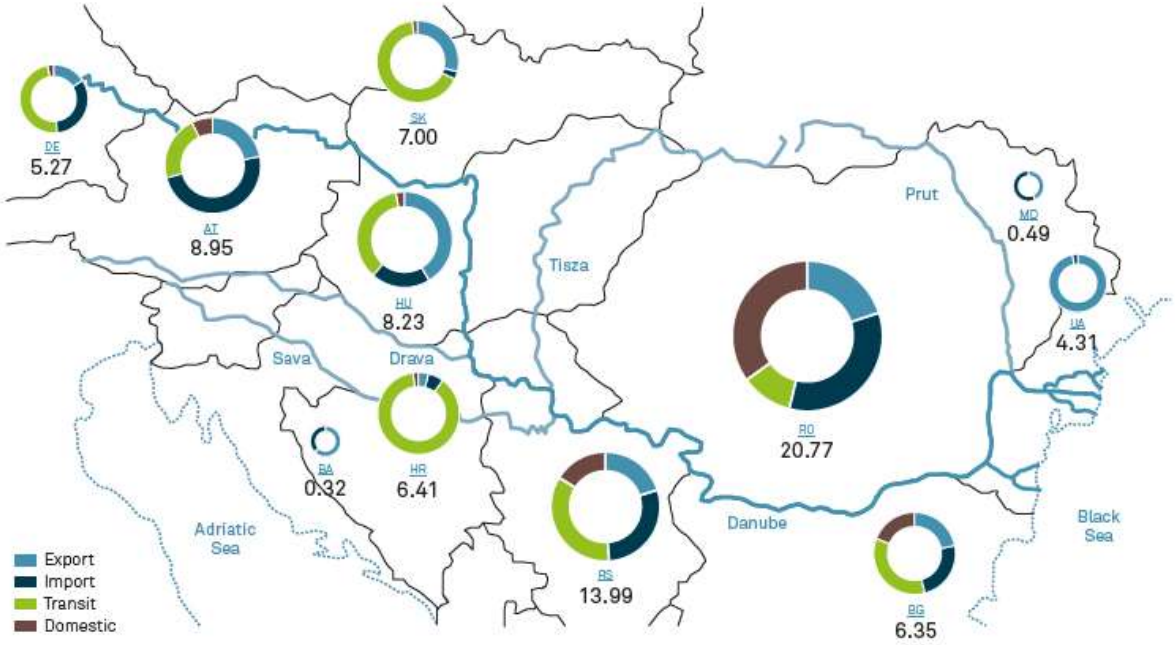
Figure 10 Distribution of freight transport per Danube section (in tonnes) in 2017



Source: own edition, data: Eurostat, BSV, stat.gov.rs

Freight transport on the Danube may be divided into export, import, transit, and domestic traffic. Import and transit prevail in the Upper section and transit and export in the Middle. The Lower section is the only one where domestic traffic is significant; in contrast, logically, transit is low. Serbia seems to be atypical, maybe partly in line with its position in the border of two sections; although export and transit were responsible for the largest volumes in 2016, import and domestic traffic were also relevant there. In this respect, distribution of volumes in both Serbia and Bulgaria are balanced. Low proportion of transit in Romania is due to its position and outstanding volumes of IWT in general.

Figure 11 Distribution of freight transport on the Danube by the type of traffic in 2016



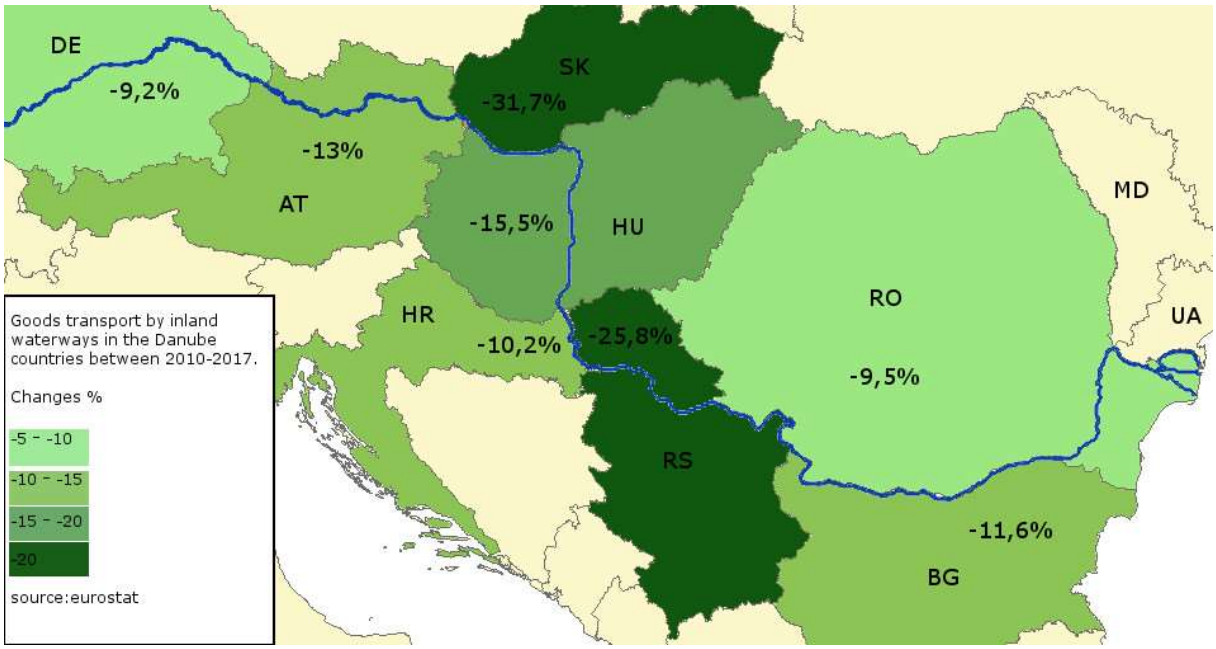
In millions of tons	DE	AT	SK	HU	HR	BA	RS	RO	BG	MD	UA
Export	0.82	2.00	2.09	3.41	0.22	0.20	2.79	4.13	1.39	0.21	4.22
Import	1.74	4.36	0.13	1.69	0.41	0.12	4.04	7.09	1.54	0.28	0.08
Transit	2.56	1.98	4.74	2.94	5.68	0.00	4.88	2.20	2.20	0.00	0.00
Domestic	0.15	0.61	0.04	0.20	0.10	0.00	2.28	7.35	1.22	0.00	0.01
Total	5.27	8.95	7.00	8.23	6.41	0.32	13.99	20.77	6.35	0.49	4.31

Source: via donau 2018, p. 40

Transport volumes are illustrated by Figure 12. Comparison of the data of 2010 and 2017 (in thousand tonnes) is visualized on the map. As there is decline in all countries, changes have been grouped into four categories. Belonging to a certain river section seems to be characteristic, e.g. downturn is salient in the Middle section, especially in Slovakia and Serbia. Although taking into account weather (and subsequent fairway) conditions of the analysed years

would be logical here, this is ignored especially for the impartial evaluation of EUSDR targets. The Strategy addresses improvements of navigability in general, i.e. it targets waterway infrastructure and maintenance levels that allow or even promote the transport of the targeted volumes in almost all conditions. And although this is a late mid-term evaluation, some positive achievements would be necessary by now in order to reach the targets for 2020. By the way, similar trend (decline) would be seen if the data were in tonne-kilometers, as well (European Union 2018).

Figure 12 Change of freight transport volumes on the Danube (2017/2010, in tonnes)



Source: own edition, data: eurostat

DISCUSSION AND CONCLUSION

In this paper, impacts of EUSDR in the IWT sector have been reviewed. One of the key findings is that social, political, and economic differences previously revealed by the literature are relevant for this topic, as well: the three (Upper, Middle, and Lower) river sections have different characteristics in terms of inland navigation efforts, opportunities, and performances. Freight transport data, types of transport (export, import, transit, domestic), and the range of developments all justify this categorization. Indeed, there are some exceptions, such as the case of Slovakia, where a large scale port development project makes its investment budget similar to the Upper section countries. From the same point of view, Bulgaria would belong to the Middle section countries (except Slovakia), due to its moderated activity to carry out developments.

With regard to the research questions (related to EUSDR targets) raised in the introduction, it may be underlined that the expected increase of transport volumes on the Danube from 2010 to 2017 (or expectedly by 2020) is not being achieved. Moreover, freight transport volumes (in tonnes) declined from 2010 to 2017. It seems that, in spite of the future outcomes of many ongoing projects in line with EUSDR, revolutionary changes are needed to effectively promote inland navigation in the macro-region. Not only well-defined infrastructure developments are necessary, but also programmes to improve multimodality and IWT competitiveness, taking into account the future of the entire transport system and other single sectors, especially road and rail (Jászberényi & Munkácsy 2018). Better cooperation within EUSDR (e.g. among projects or between priority areas 1a and 1b), as well as with other strategies and programmes would also be useful.

The study of developments in line with EUSDR pointed out, among other findings, that commitment of countries may be completely different. Although navigability in the Middle section is a key issue for increasing competitiveness, only very limited resources have been dedicated to waterway improvements and port investments there (except for Slovakia for some extent in terms of ports), where low water levels may be critical. On the contrary, Romania seems to be a promoter and a main beneficiary of IWT developments. Austria has a key role in initiating and leading transnational projects, as well as coordinating research activities.

Data availability is an evident limitation of this study. By early 2019, a year before the expected targets of EUSDR in terms of inland navigation, 2017 data was available for the analysis. The complete period of 2010 to 2020 may (and shall) be evaluated in 2022 or even later. Meanwhile there is a lot to do, not only by EUSDR priority area coordinators, member state institutions and other potential project partners, but also scholars. As stated above, EUSDR and IWT are both under-researched topics, thus researchers shall devote further efforts to properly study inland navigation and interpret the impacts of EUSDR, as well as translate their findings into policy recommendations and practical solutions.

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TOURISM FOCUSED ANALYSIS OF NARROW-GAUGE RAILWAYS IN HUNGARY

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Abstract

Narrow-gauge railways showed rising significance as tourist attractions over the past few years in Hungary. This fact underlines the importance of complex evaluation regarding social, economic and environmental impact of development. This paper focuses on touristic and regional idiosyncrasies.
One of the purposes of this article is to provide **a review of the national or regional policy documents** affecting the development of narrow-gauge railways. The National Narrow-gauge Railway Development Concept (*Országos Kisvasúti Koncepció;* Transinvest Ltd, 2015) contains status overview, lists special targets and development alternatives both for infrastructure and for rolling stock. National Strategy for Tourism Development until 2030 (*Nemzeti Turizmusfejlesztési Stratégia 2030;* Hungarian Tourism Agency, 2017) also contains some relevant aspects; however goals for integrating narrow gauge railway services into main touristic attractions are not specific enough.
For **economic and financial viability analysis** of narrow-gauge railway operation and maintenance, existing railway lines were categorized by tourist and mixed passenger traffic during assessment. Based on these quantities traffic categories were formulated. In touristic passenger demand expected change implicated by development was linked to main indicators of national economy by regression analysis to support **demand forecast**.
For tourism-driven development of narrow-gauge railways identification of the attractive elements' touristic values has major importance. To support development plans of Hungarian narrow-gauge railways **touristic potential matrices** were devised, describing both current state and future estimates. The matrix of anticipated potentials may be used as directives for local touristic developments. Furthermore, several **best-practice advices** were also conceived to improve the effect of touristic utilization (e.g. use of hybrid timetables, capitalize on ecotourism, rebranding, etc). Two case studies (Narrow-gauge railways of Kecskemét and Balatonfenyves) are presented in the paper demonstrating the success of the advised methodology and for better identification of possible development options affected by the tourism potential. Best-practices show how the narrow-gauge rail services can help regional and local developments.

Keywords: narrow-gauge railways, policy documents, demand forecast, touristic potential, best-practice advices

INTRODUCTION

Narrow-gauge railways (Fig. 1) showed rising significance as tourist attractions over the past few years in Hungary. This fact underlines the importance of complex evaluation regarding social, economic and environmental impact of rail developments. Relevance of the topic is also indicated by the recent rehabilitation works and further developments started or announced by

the government. This paper focuses on touristic and regional idiosyncrasies of narrow-gauge railways in Hungary.

Development possibilities and operation of individual railway lines are influenced by the ownership and legal status of the operator. This review deals with 29 forestry, company, museum and MÁV owned railways (excluding mining and other industrial railways). Narrow-gauge railways are owned by MÁV Zrt., state forest companies, local governments or private organizations. The total length of track is 510 km, of which 224 km is currently under operation: (gauges are almost exclusively 760 mm). Rolling stock consists of 122 locomotives, 239 passenger cars and 329 freight cars. Further technical data on infrastructure and rolling stock of narrow-gauge railways is contained in the F&B Consulting - Xellum 2008 study; Köller, 2016 series of articles and the Csiba J. et al, 2007 vehicle album.

Figure 1 Narrow-gauge railways of Hungary

Source: Köller, 2016

Based on the above-mentioned ownership arrangements, the development of narrow-gauge passenger railways is also diverse. In most cases, these lines have been created by extending or modifying the freight tracks of mining or forest railways. Nowadays they serve mainly touristic purposes because of their location, but in many cases the public transport function also appears. That is why it is worthwhile to deal with touristic features in more detail.

The analytical method starts with the exploration of relevant policies. Then demand forecast is done by categorizing characteristic traffic values of the lines. We analyzed passenger traffic tendencies indicated by national economy indicators and we estimated future traffic demand. In the second part of our article, we present methodological considerations that can be used to carry out more detailed analysis by definition of touristic potential matrices and lessons learnt by two relevant case studies.

METHODOLOGICAL BACKGROUND

Policy background

One of the purposes of this article is the review of national and regional policy documents affecting the development of narrow-gauge railways. The **National Infrastructure Development Strategy** /NKS/ (Strategy Consortium (2013)) and the National Railway Development Concept do not include narrow-gauge railways, although different types of infrastructure development should be harmonized. The strategy is in line with National Development and Regional Development Concept and its objective system presents 3 planning periods: very long term until 2041 (4 EU financial/supporting periods), long term: 2027 (2 EU financial/supporting periods) and medium term until 2020 (1 EU financial/supporting period). It is also mentioned in the document that a key issue of the Hungarian transport system is sustainable financing and that the required rehabilitation rate of the railway network is around 200km/year compared to the recent 20km/year.

As an independent policy document, at the end of 2015 the **National Narrow-gauge Railway Development Concept** (OKK, Országos Kisvasúti Koncepció; Transinvest Ltd, 2015a) was completed to provide an overview of such a special field of infrastructure. The OKK describes and analyses current conditions and future development possibilities of narrow-gauge railways. It is a niche document, because it contains status overview, lists special targets and development alternatives both for infrastructures and rolling stocks of the narrow-gauge railway lines.

National Strategy for Tourism Development until 2030 (Nemzeti Turizmusfejlesztési Stratégia 2030; Hungarian Tourism Agency, 2017) also contains some relevant aspects: „A new method of attraction development and basic infrastructure development is to supplement a

destination-based approach, that shall guarantee economic, social and ecological sustainability of the developed attractions, and ensure that visitors can enjoy high-quality experience".

Rail infrastructure is mentioned as one of the tourism-serving or supporting resources, and the supporting pillars identified within the Tourism Strategy include two relevant goals:

"H2. Family-friendly tourism: The essence of this principle is to establish tourist attractions which provide shared experiences for multiple generations, and the development of family friendly accommodation services and transport infrastructure."

"H3. Accessible tourism: The goal is to achieve physical and informational/communication accessibility as well as improve the direct physical accessibility of the attractions."

However it can be stated that the targets for the integration of narrow gauge railway services into main touristic attractions are not specific enough.

On local level special planning documents can be relevant. **Sustainable Energy Action and Climate Plans** (SECAPs) combine energy and climate issues, including interventions and development ideas for transport at the municipal level. The SECAPs quantify the most important indicators and identify interventions and development modes that help to achieve the objectives. **Sustainable Urban Mobility Plans** (SUMPs) contain long-term visions and clear implementation plans using participatory approach for a balanced and integrated development of all transport modes.

Demand forecast

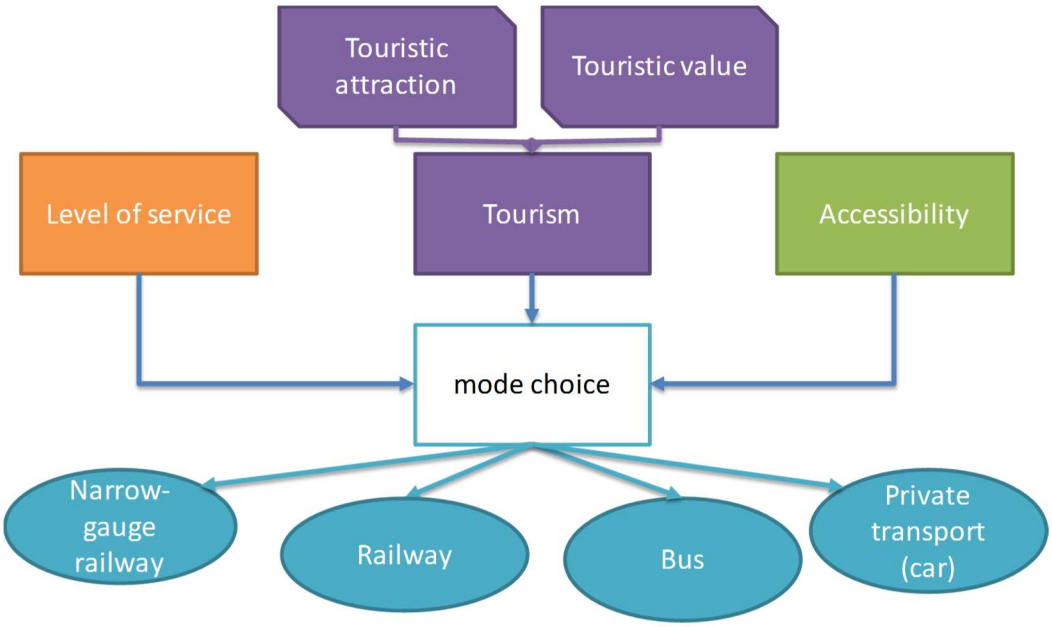
For economic and financial viability analysis of narrow-gauge railway operation and maintenance, existing railway lines were categorized by tourist and mixed passenger traffic during assessment. Based on these quantities traffic categories were formulated. In touristic passenger demand expected change implicated by development was linked to main indicators of national economy by regression analysis to support **demand forecast**.

Considering the separated, linear nature of the narrow-gauge railway lines, **expected passenger traffic performances** (volume of traffic demand, choice of modes) were described with a corridor model. With this model, only travel patterns and expected traffic trends of the given line serve as a basis, without considering larger network components (urban, regional, etc.). Therefore, forecasted numbers of passengers are based on targeted surveys, or careful estimates should be made. The role of transport in the economy is determined by characteristics

of traffic performance and the passenger transport market (Jászberényi- Pálfalvi, 2006; Jászberényi (Ed). 2018), so demand side analysis is necessary for assessment of the present situation and exploration of the tourism potential.

For touristic purposes elements affecting mode choice of passenger transport (Fig.2) are characterized by service level. A tourist's decisions are comfort-oriented, typically related to the level of enjoyment. Utility is important for efficiency-based decisions made by public transport users traveling to work (e.g. suburban transport). Both characteristics are important in mode choice of passenger transport (De Dios Ortúzar - Willumsen, 2011).

Figure 2 Components of passenger traffic for touristic purposes, mode choice



Source: Own work

Due to the wide range of touristic and mixed passenger traffic of different railway lines, creating **traffic groups** is necessary:

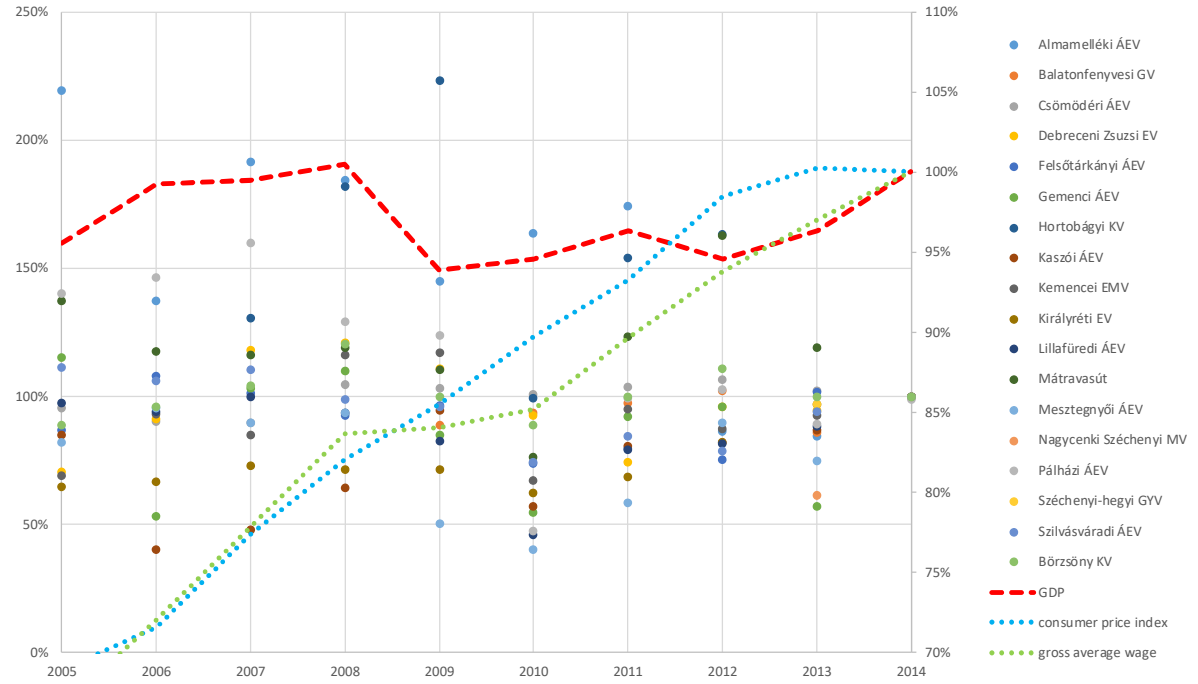
• low demand: 1,000-10,000 passengers / year (Ágmelléki ÁEV, Hortobágyi ÁEV, Nagycenki Széchenyi MV)

• medium demand: 10,000-100,000 passengers / year (Balatonfenyvesi GV, Zsuzsi Debreceni EV, FEVS, ÁEV Gemenc, Kemence EMV, Pálházi ÁEV)

• high demand: 100,000 -1,000,000 passengers / year (Széchenyi-hegyi GYV, Lillafüredi ÁEV, Mátravasút, Szilvásváradi ÁEV, Nyírvidéki KV, Kecskeméti KV)

For future forecast **correlation between touristic demand and national economic indicators** should be analyzed. Fig. 3 shows how passenger traffic data – provided by railway operators – can be related to key indicators of national economy. Looking at changes in passenger traffic over time, it can be concluded that in most cases the economic crisis of 2008 led to a drastic decline later in 2010, which was followed by a second and smaller decline in 2013. Examining dependence of change in the number of passengers related to national economy shows a clear positive trend.

Figure 3 Time trends of tourism-related passenger traffic compared to national economic indicators



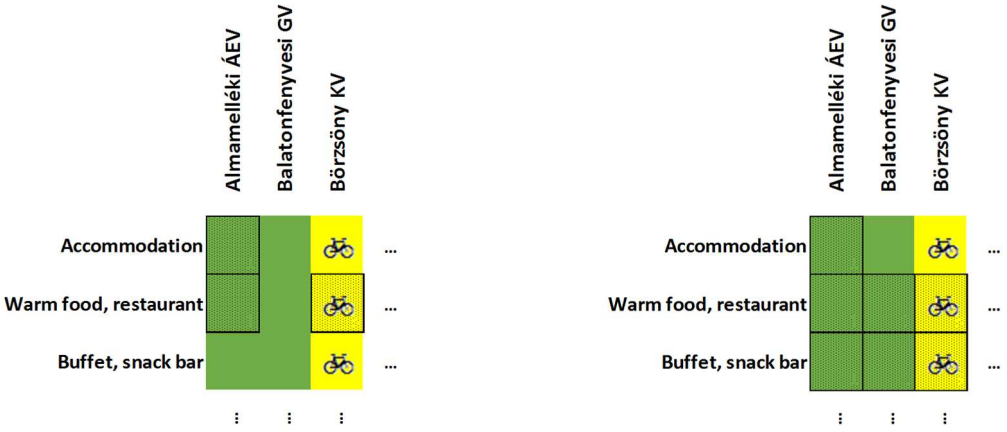
Left axis: passenger volume, 2014 = 100%, right-hand axis: economic indicators, 2014 = 100%. Source: Own edition based on the data of the Central Statistical Office and the survey of passenger traffic

For **estimation of future passenger traffic** in the short term, a slight upward trend can be forecasted based on observed tendencies of previous years. **Cluster analysis** of applied traffic categories (from small to high traffic volumes) can provide reliable data about expected dynamic increase in passenger numbers. Although cluster analysis was done for a small sample of railways, such evaluation of the traffic characteristics can efficiently help the planning and preparation processes of narrow-gauge railway developments.

ANALYSIS OF TOURISTIC POTENTIAL

For tourism-driven development of narrow-gauge railways identification of touristic values of attractive elements has major importance. As touristic attractiveness of individual railway lines depends heavily on nearby attractions and program opportunities, the touristic potential effects of each line are described by a matrix. To support the development plans of narrow-gauge railways **touristic potential matrices** were devised, describing both the current state and future estimates. Fig. 4 shows relations of the matrices.

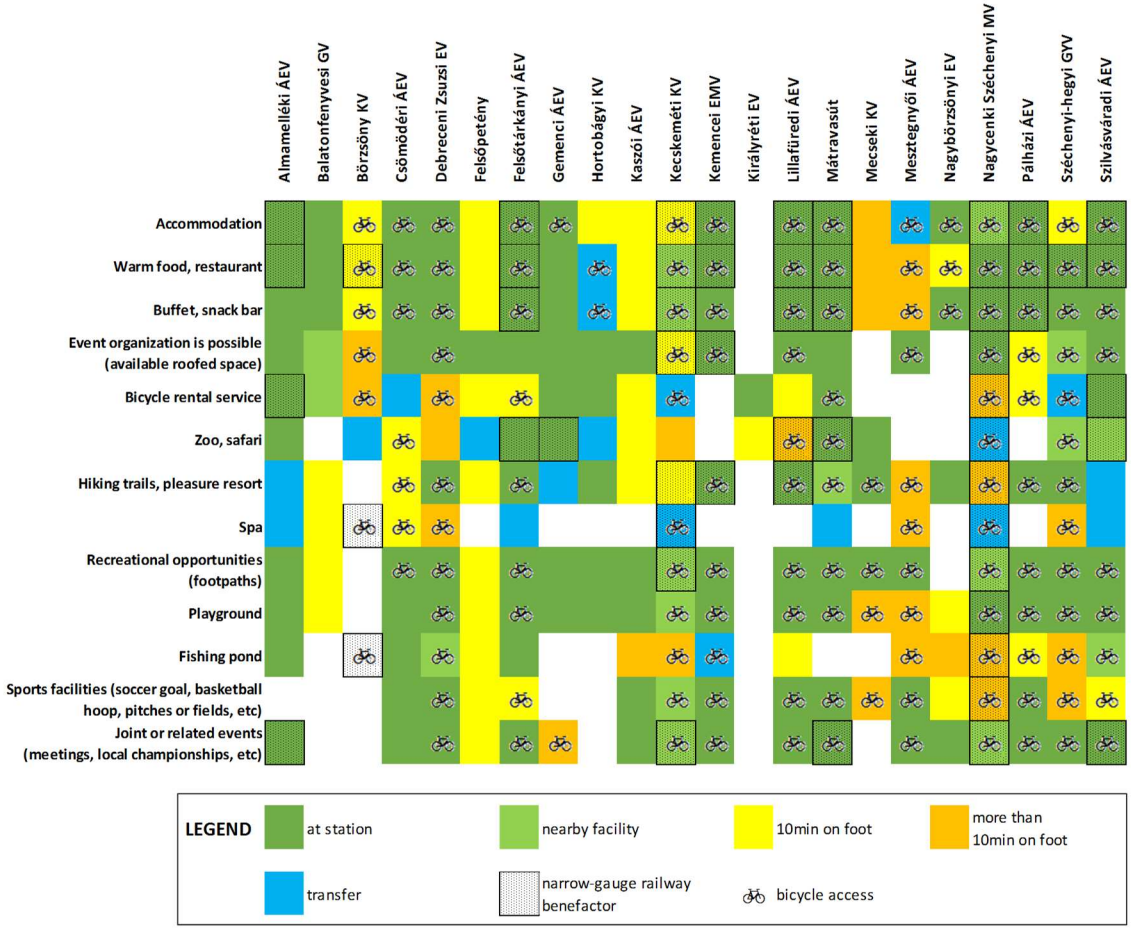
Figure 4 Touristic potential matrices



Source: Own work

Based on questionnaire interviews with railway operators the tourist destinations that were present nearby the lines were collected. For estimation of the full potential, touristic values of these attractive elements can be weighted and summarized. It will indicate the impact of facility attractiveness on the number of tourists appearing and volume of future passenger demand. New rail developments can be planned considering the impact of touristic potential. Fig. 5 shows existing tourist facilities in the vicinity of narrow-gauge railways.

Figure 5 Tourist facilities in the vicinity of narrow-gauge railways, current state



Source: Own work

"Narrow-gauge railway benefactor" marks that different discounts can be applied by presenting the travel certificate (train ticket).

The present state matrix of anticipated potentials may be used as a directive for local touristic developments. General **best-practice advices** are conceived to improve the effect of touristic utilization.

With the exception of a few lines, access to attractions, programs, and services offered by the railway are given, almost all of them are located at the stops or in their close area. Most of the tourist destinations are accessible by bicycle.

Eco-tourism can be part of the offered services at the lakeside or the extension of services related to national parks taking into account international examples (Lundberg – Fredman, 2012; EUROPARC Federation, 2010). Further support can be provided to evaluate achieved results and to use sustainability and performance indicators (Pomucz – Csete, 2015; Castellini – Sala, 2010). As a result of a relevant study (Vujko et al, 2018) it is also obvious that development of eco-tourism would raise the awareness of local residents about the importance of preserving protected areas.

On a horizontal level, there are different **facilities**: easy-to-install items including bike rental options, or more difficult-to-install elements like zoo, spa and fishing ponds. However, in most cases, playgrounds, sports and recreational facilities are easily and quickly accessible, providing a good basis for improving eco-tourism. Since dining options are generally easy to access, long or full-day programs are also encouraged and help to create thematic routes.

Tourist destinations are in synergy with railways in almost half of cases. These are high level correlations, when railway management would have taken the necessary steps for better cooperation. Communication about touristic attractiveness – in a framework of destination management - usually focuses on brands (Bódis, 2017) and could strengthen the well-known characteristics of narrow-gauge railways.

CASE STUDIES

Two case studies (Narrow-gauge railways of Kecskemét and Balatonfenyves) are presented here demonstrating the success of advised methodology. Both lines belong to MÁV Hungarian State Railways.

Narrow-gauge railways of Kecskemét

The railway line was established in 1917 to transport timber and other products. Later the role in commuter traffic has also become significant. Line operation was cancelled in 2009 that lead to deterioration of tracks and buildings. Several re-opening initiatives have failed until now. A major obstacle is that the touristic characteristics of Kecskemét area have changed, and foreign visitors are less likely to seek out the sights associated with the wilderness. Location of the narrow-gauge railway line and its connection with city transport is also not favorable. Further problem is the accessibility of stations and stops (Transinvest Ltd, 2015c).

Touristic potential elements of Kecskemét narrow-gauge railways are:

- Natural attraction, Kiskunság National Park (sand forests and sandbanks, swamps, marshes, and salted swamps alternate).
- Shepherd museum, horse show at Bugac: Bugac is one of the most well-known Hungarian wildernesses and is still one of the central areas of indigenous Hungarian pet farming, part of the Kiskunság National Park.
- This railway has a lot of potential as passengers may find many attractive facilities along the line. Although access is limited in some cases (e.g. spa and bicycle rental could be reached only by transferring to other public transport services) it also can be perceived as balanced.

- Important facilities with short dwelling time are close-by (catering, playground, sports facilities).
- Places for more time-consuming activities are also in the range of 10 minutes' walk time (event spaces, pleasure resort and accommodation).
- Larger facilities could also be reached by foot (zoo, fishing pond).
- Almost every one of these places is accessible by bicycle as well and has discounts or other solutions favoring passengers of the railway.

Reasonable development option is renovation of the railway line between Kecskemét and Bugac (27.8 km) reconnecting to many existing touristic attractions without the cost of complete line rehabilitation. Extension of the railway line to 'Kecskemét alsó' station is also possible (intermodal connection and parking facilities).

A mix of commuter and tourist functions can increase the number of potential users for a narrow-gauge railway therefore it is more sustainable. Railways that are suitable for commuter traffic due to their geographical location are also suitable for tourist purposes. Serving two different needs can be managed by setting up a hybrid schedule (which should also be considered in the case of exclusive tourist traffic). This schedule may include fast and slow trains on the line. Fast trains with low passenger capacity (e.g. a motor car) would transfer passengers at higher speeds, possibly for only a few stops' distance. Slow trains with higher capacity (two to three motor cars) would carry passengers at speeds that could favor local attractions. This kind of mixed schedule would not only make it possible to co-ordinate mixed (commuter and tourist) demand, but could also benefit tourists, who are curious about the sights, but only once. They could travel in one direction and spend time at the destination (e.g. in nature) rather than taking the return journey.

Schedule should also be flexible, adjusting to events taking place along the line.

Attractivity of discounts and other joint services should also be emphasized by offering program packages by the national park for train + walking tour or train + cycling trip (combined pricing as well). Other packages may offer program packages for train + horse show + regional cuisine, etc.

While most facilities by the railway may be accessed by bicycle, rental options are thin. Providing opportunities for bicycle rental, along with possibilities of transportation and storage would promote this environmentally friendly transportation mode.

Infrastructure development cost is around 14 million EUR (2015 prices).

Narrow-gauge railways of Balatonfenyves

The first section of this railway line was put into operation in 1950. Initially, agricultural crops, peat and lime sludge were transported from the surrounding provinces to Balatonfenyves. Later commuting function became dominant, complemented by visitors of Csisztafürdő Spa. The narrow-gauge railway is still a popular tourist attraction in the Balaton region, bringing passengers between Lake Balaton and Somogyszentpál (5-7 pairs of train per day), however operation of the Csisztafürdő line section was cancelled in 2009 (Transinvest Ltd, 2015b).

After a 10-year long break, with the support of 2 million EUR, the railway will be partly developed: lines will operate till Csisztafürdő station again. Regional settlements submitted applications in 2016 under the leadership of Balatonfenyves with the goal to reopen the line to the thermal spa of Csisztapuszta, which is only 5-6 kilometers away from Lake Balaton. The works will include renovation of the terminal station's catering unit in Balatonfenyves. The range of tourist attractions directly linked to the narrow-gauge railway is poor.

Elements of the touristic potential of Balatonfenyves narrow-gauge railways to be developed are:

- There are opportunities for longer recreational activities nearby but there is no facilities close by for shorter recreation.
- Larger – more expensive – facilities are missing
- Bicycle access – along with rental options – is missing
- There are no beneficial offers from nearby facilities for tourist travelling with the narrow-gauge railway.

Developing a mixed and flexible schedule (commuter and touristic purpose) is also desirable (see details above). Adjusting this schedule to opening time of attractive places (bath) would also improve passenger comfort and attractiveness.

Installing soccer goals, or outdoor exercise machines at one or more stations would complement the already existing recreational attractiveness. It would be unreasonable to invest in larger facilities (i.e. zoo) but a dedicated pitch or field would further improve the sports facilities.

Providing opportunities for bicycle rental, transportation and storage makes existing facilities more accessible – as many of them are 10 minutes' walk away.

Thematic program proposals support ecotourism. A thematic route consists of several elements or sections that can be visited or spectated by stopping at route stations. All this can be created by additional stops, displaying attraction and activity advisory boards at stops;

assigning pedestrian or cycling paths, photo paths or photo points between stops - allowing people this way to gain and accumulate experience and to increase the stay.

An additional possibility is to generate a circle route: pedestrian and cycling circuit can be assigned along shorter lines, giving visitors the opportunity to freely combine individual sections and walk around the area. For this reason, it is necessary to make wagons suitable for bicycle transportation, or to provide a range of bicycle rental services. Example for circle route is the Gemenc railway, after riding across the Gemenc Forest, reaching River Danube one can change to a cruise boat and return to the starting point on water. The Lillafüred ÁVV's Santa Train is a good example of combining attractiveness and transport function by introducing thematic days in partnership with local national park management. Topics come quite often from the cycle of seasons, from the periodic change of the natural environment (e.g. snowdrop search, deer rutting, crane migration).

CONCLUSION

In this paper we presented the diversity of narrow-gauge railways focusing on tourism-driven functions. We explored the policy background with analysis of relevant strategies and concepts to set goals for possible infrastructure developments. We categorized 29 railway lines by passenger traffic volumes and prepared a corridor-model for demand analysis, considering the high degree of independence of the narrow-gauge railways from the surrounding transportation network.

For better understanding of possible development options mapping of tourism potential characteristics is necessary on the basis of traffic and infrastructure, accounting for the uniqueness of narrow-gauge railways. Higher level rail services can help regional and local developments; that is the reason why regional development funds - as major financial sources- are available for narrow-gauge railway owners.

We have also provided best practices and identified possible touristic project elements for two selected railway lines. The main conclusion concerning case studies is that innovative use of hybrid timetables and upgrading of ecotourism can improve the effect of touristic use of narrow-gauge railways.

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REGIONAL CHARACTERISTICS OF GREENHOUSE GAS EMISSIONS AND DECARBONIZATION OPTIONS IN HUNGARY

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Abstract

On the basis of common and unified methodologies, NUTS3 (county) level climate change strategies have been completed in Hungary. The strategies also consist comprehensive inventories of greenhouse gas (GHG) emissions, as well as quantified decarbonization (emission reduction) targets for the years of 2020, 2030 and optionally, 2050. The primary objective of the paper is to identify the spatial structure of the GHG emissions and to assess the interconnection between NUT3 level economic development and emission patterns. Comparative analyses of the county's decarbonization targets are also presented in order to assess their contribution in the national commitments under Paris Agreement. Results suggest that NUTS3 level CO2 emissions show a typical spatial pattern with a strong interrelation with county's socio-economic typology. Finally, the paper provides suggestions to integrate the regional characteristics of decarbonization into county's transition to sustainable development.

Keywords: climate change strategy, decarbonization target, regional sustainable development, Hungary

INTRODUCTION AND LITERATURE OVERVIEW

It is a recognized fact that climate change is a global phenomenon which affects different societies as a whole: individual settlements and entire regions. In order to respond effectively to climate change, global players at different levels require both methodology and tools for decision making process. Mitigation and adaptation might be complementary at some levels, but they can be contradictory at some point. Therefore, the development of a methodology and a tool to help individuals, communities, countries or regions in the decision-making process towards the best response to climate change is required. (Laukkonen et al, 2009)

The current integrated energy and climate policy has proposed a 20 % reduction in GHG (greenhouse gases) in the Member States by 2020. One of the principal tools is to improve energy efficiency under the energy efficiency action plan, which is supposed to cut the entire energy usage by 20 % by 2020. On the other hand, the amount of energy from renewable sources

consumed in Europe will have to rise to 20 % by 2020. These are ambitious but achievable aims. (Carvalho, 2012)

Countries are implementing CO2 emission reduction targets in order to meet a globally agreed global warming limit of +1,5°C. Strategic Environmental Assessment is a particularly suitable tool for the study of climate protection at regional level. This tool makes it possible to assess the effects of environmental parameters listed in the legislation, such as soil, biodiversity, water, etc. It is necessary to have global climate change protection targets on regional and local levels as well. Territorial and urban planning, in particular, has a huge potential for reducing energy and CO2 emissions, as well as other greenhouse gases. This issue must properly be addressed in the planning and decision making processes at the level of municipalities. (Wende et al, 2012).

The Competitive Cities and Climate Change Study is based on the results of existing research and recent developments in OECD countries. It is focused on two issues: the local and multilevel dimensions of urban climate management. Many cities are not yet making use of the opportunities to implement climate protection measures through "hard" regulation and strategic planning. (OECD, 2008)

The emissions of carbon-dioxide and other greenhouse gases are one of the most important indicator on transition to sustainable development (Iyer et al, 2018). The calculation of total greenhouse gas emissions in Hungary is estimated to 63,8 million tonnes in 2017 (HMS, 2019) which has shown a slight increasing tendency for last 5 years. A few Hungarian cities have also prepared and adopted Sustainable Energy-Climate Action Plans (SECAP). In accordance with the Guidelines of Covenant of Mayors (Bertoldi, 2018), the baseline greenhouse gas emission inventories (i.e. calculations of emissions) should be a compulsory and central element of the SECAP documents, therefore, in case of 35 cities, estimation on the city-level greenhouse gas emissions are available. In spite of existing CO2 emission figures on national and (in some cases) city level emissions, the spatial structure of greenhouse gas emissions is still unknown in Hungary. The primary goal of our research is to identify and analyze the NUTS-3 level distribution of greenhouse gas emissions in Hungary, as well as to determine the possible interrelations between the county’s greenhouse gas emissions and their socio-economic circumstances.

It is also a relevant science-based and policy-relevant question that how can the local and regional level municipalities (for example cities, counties) contribute in national level greenhouse gas emission reduction commitments. National Climate Change Strategy (NCCS-

2, 2018) adopted by the Parliament in 2018 clearly stated that national greenhouse gas emissions should be reduced at least by 40% until 2030 (compared to 1990 level). It means further 13% decrease in GHG emissions related to 2017 figures. Nevertheless, no information has revealed on the possible regional effort sharing until now therefore another goal of the present paper is to present a comparative analysis of the decarbonization targets (i.e. NUTS-3 level emission reduction targets for 2030) of Hungary's counties. Finally, the county's climate change related policy responses should also be an important information on regional sustainable development. In order to determine the spatial characteristics of these policy responses a classification of climate change mitigation measures planned by the county's municipalities is also shown.

METHODOLOGICAL BACKGROUND

Methodological framework of our research is based on the general socio-economic conditions in NUTS-3 level in Hungary. Regional differences can be observed in every country and are constantly changing, due to geographical conditions, environment, political situation and other influencing factors. The smaller the territorial level wherein the differentiation is examined, the more differences can be detected. (TOP, 2014). The most commonly used indicator for the spatial comparison of economic development is the gross domestic product per capita. The most important factors influencing the economic development are the spread of enterprises, investments, highlighting housing investments, foreign investments in the capital supply, and R&D activities. (CSO, 2013)

A country's GDP is made up of the GDP of its regions. In accordance with the principle of subsidiarity, the counties in Hungary are suitable for the study of regional differences and thus properly small units to reduce regional disparities. As it is presented in Tab. 1, Hungary is highly differentiated, with the standard deviation of the county's per capita GDP being the second largest in the EU. (TOP, 2014). In terms of GDP per capita of 19 counties and Budapest, the capital's outstanding value and the development of three Transdanubian counties (Győr-Moson-Sopron, Fejér and Komárom-Esztergom) are conspicuous. Of the 19 counties, the county of Nógrád is the farthest from the national average.

Table 1 Tendencies in economic performance of Hungarian counties: GDP/capita (millions Ft/capita)

Source: CSO, 2018 (own editing)

According to a classification of counties based on their similar socio-economic conditions and developmental paths (Lengyel and Varga, 2018), 86% of the population of Central-Hungary live in Budapest and its districts, which is why Budapest and Pest County became center counties (Tab. 2). The other types of counties were classified based on their economic growth observed from 2000 to 2012, the 2016 GDP-value and their economic structure. The spatial location of the county types is crucial; industrial counties where foreign direct investment flows into are located in Northern Transdanubian, in its neighborhood or near Budapest. Re-industrializing counties can be found in traditionally industrial areas (such as Borsod-Abaúj-Zemplén). The rural counties are located at the southern eastern border. Nógrád County is slightly out of this scheme, although it is located at the border, as 14 out of 19 counties, but despite its geographical proximity to Budapest, its economic performance is very weak. Based on the annual growth rates of the Hungarian economy, one can distinguish three periods: the periods 2000-2006, 2007-2012 and 2013-2016. In the period of 2000-2006, the economy increased in varying degrees, but everywhere. Downturn and stagnation can be observed between 2007 and 2012, but from 2013 economy began to rise and expand in every county again.

Table 2 Socio-economic typology of counties in Hungary

County Types	**County's name**	**Abre-vation**
Central	Budapest	BUD
	Pest	PES
Industrial	Győr-Moson-Sopron	GYMS
	Fejér	FEJ
	Komárom-Esztergom	KEM
	Vas	VAS
Re-industrializing	Bács-Kiskun	BKK
	Zala	ZAL
	Veszprém	VESZ
	Heves	HEV
	Borsod-Abaúj-Zemplén	BAZ
	Jász-Nagykun-Szolnok	JNSZ
Knowledge Center	Baranya	BAR
	Csongrád	CSO
	Hajdú-Bihar	HB
Rural	Tolna	TOL
	Somogy	SOM
	Békés	BÉK
	Szabolcs-Szatmár-Bereg	SZSZB
	Nógrád	NÓG

Source: Lengyel and Varga (2018)

It can be stated that there are significant differences between the counties in Hungary, and that regions with different levels of development cannot be managed with the same economic

development action plan. (Lukovics, 2012) In order to increase the long term and sustainable competitiveness of the counties, mapping the strengths and weaknesses of the counties is inevitable (Bajmócy, Gébert, and Málovics, 2017).

Second pillar of our research's theoretical framework is the methodology for preparation of NUTS3-level climate change strategies. The climate change strategies (both international, national, territorial, sectoral or company levels) may provide a unique framework for decision making related to climate change policy integration in fields of GHG emission reduction (mitigation) and improvement the climate resilience (adaptation) as well. According to the most recent assessment of Intergovernmental Panel on Climate Change (IPCC), unless global greenhouse gas (GHG) emissions are reduced by 45 percent by 2030 related 2010 levels, a 1.5 C global warming and serious climate change impacts in local levels are expected until 2030 (IPCC, 2018). Although, under the Paris Climate Agreement nations should complete their national climate plans by 2020, it is also widely acknowledged that the current national strategies and plans are insufficient to limit global warming to 1,5 C. The Paris Agreement also recognizes that local and regional municipalities play a critical role in global climate action. Achieving more ambitious emission reduction objectives as well as improve the preparedness for adverse local and regional effects of climate change a clear and reinforced role of multilevel governing cooperation is required. This multilevel governing needs harmonized and coordinated preparation of climate change related strategic documents (i.e. climate change strategies, action plans) at different levels of municipalities. It also means that a unified framework for climate change policy planning in rural settlements, cities micro-regions and counties should also be developed.

Environmental and Energy Efficiency Operative Programme of Hungary funded by EU Cohesion Fund and Regional Development Fund support sustainable growth and contribute to achieving the Europe 2020 targets for smart, sustainable and inclusive growth (EEE OP, 2015). The EEE OP has thematic priorities on transition to low-carbon economy, as well as climate change risk prevention and a special target on preparation of municipal-level climate change strategies. A compulsory output indicator has also been set to this special target: the cumulate number of inhabitants in settlements which adopted climate change strategies should reach at least 3 million inhabitants until 2023. In order to fulfil this requirement a three pillars grant scheme has been established:

- 1st pillar: capacity building to develop methodological framework of strategy making at different level of municipalities, promote knowledge transfer and provide professional assistance for municipalities.

- 2nd pillar: support the NUTS-3 level climate change strategy making. (Beneficiaries: county's municipalities)
- 3rd pillar: support the settlement level (villages, towns, cities) climate change strategy making. (Beneficiaries: settlement's municipalities)

In the framework of methodological development, the Alliance of Climate-Friendly Municipalities (as a beneficiary of 1st pillar's grant), in cooperation with National Adaptation Center of Geological and Geophysical Institute of Hungary was responsible to develop five separate guidelines for climate change strategy of (1) counties, (2) the capital (Budapest) (3) cities, (4) small towns, villages and (5) multi-settlements (Bíró et al, 2017).

According to the methodology of county's climate change strategies, these documents should consist the following major elements:

- Inventories of greenhouse gas emission and removals
- Past and present experiences in sustainable energy and transport related projects, as well as adaptation and climate change risk related projects
- Climate change related SWOT analysis and problem tree
- Elements of county's climate change policy: decarbonization target setting and objectives of improvement of resilience
- Climate change actions: mitigation, adaptation and awareness related measures
- Implementation framework: institutional settings, progress indicators, monitoring processes

During 2017-2018, all 19 counties and Budapest have prepared their first climate change strategy. The strategies have been developed under the assistance and supervision of Alliance of Climate-Friendly Municipalities and approved by the Assemblies of County's Municipalities. According to the efficient multilevel governance, these documents are fully consistent by the Hungary's Second National Climate Change Strategy (NCCS-2, 2018) adopted by the Parliament October 2018.

The adopted county's climate change strategies form the main analytical background of present paper. The data of county's inventories of greenhouse gas emission and removals are used to identify spatial distribution of CO2 emissions. An important conclusion of the quality check of county's inventories of greenhouse gas emission and removals were to find significant inconsistencies in estimation of CO2 emissions from ETS sectors. (ETS sector covers the power plants, cement factories, steel production and other hard industry facilities. These installations are obligatory take part in EU emission trading system.) Therefore, the county's estimation of CO2 emissions does not include the industrial sources from ETS sectors.

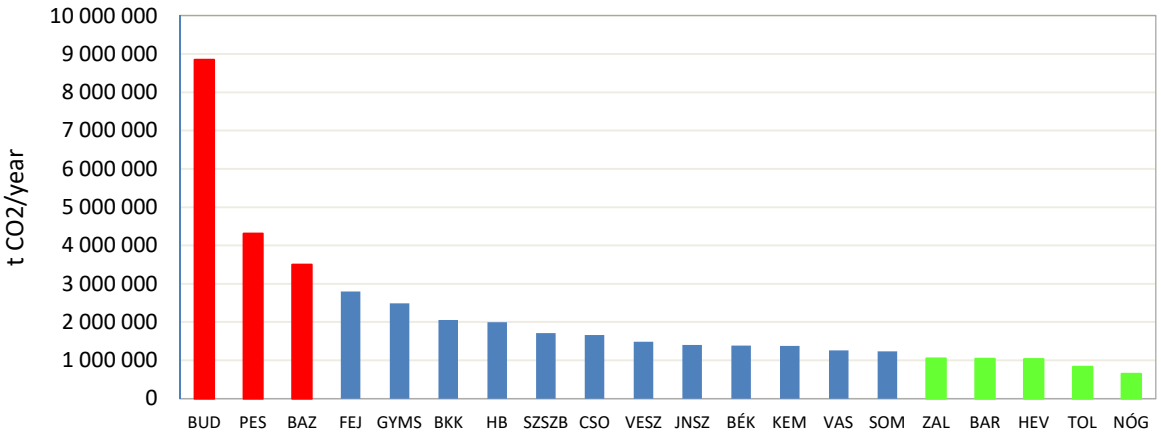
The county's CO2 quantified emission reduction targets for 2030, as well as the planned main mitigation actions are also derived from the county's climate change strategies. During the strategy's preparation, an independent review and quality control was made by the Alliance of Climate-Friendly Municipalities ("methodology developer"), therefore the data used for spatial analyses may consider as best available source of relevant information.

RESULTS AND DISCUSSION

As it is mentioned above, the aim of climate change strategies is to provide the conditions for mitigation and adaptation activities using a uniform and common climate strategy methodology. The first stage of county climate strategies is the assessment of the situation. Although, the focal part of the present research is mitigation, while the assessment of the situation of the counties, the evaluation of climate and energy awareness as well as the SWOT analysis and the problem map of the climatic aspects have also been prepared in the county's climate change strategies. In the course of the mitigation, the inventory of the county's greenhouse gases (GHG) was compiled. The preparation of GHG inventories was assisted by the Alliance of Climate-Friendly Municipalities giving software support and professional guidance (ACFM, 2018). With the help of the SWOT analysis, the counties were able to assess their strengths and opportunities more easily, they learned about their weaknesses and external threats, which can be used to map the mitigation and adaptation possibilities of the counties. After the assessment of the situation, the strategic connection points were determined, examining the connection points of the county level and their relationship with the regional and local documents. In this part the counties also introduced sustainable energy management projects that had already been implemented. With this in mind, the county's climate protection vision was elaborated. At the end of the strategic documents, the arrangement of implementation is shown, which included the planning of the county level measures and the identification of the implementation framework. The quantification of the county's decarbonization targets - expressed as the county's GHG emission reduction target (%) - is not mandatory for the counties, and the methodology only makes a recommendation. In present paper we examined mainly the county's GHG emission figures and the decarbonization targets, thereby making regional differences more visible.

First of all, we studied the GHG emissions of counties. (It is important to note that CO2 emissions shown in Fig. 1 do not include the heavy industry.) In the case of the first three counties (Budapest, Pest and Borsod-Abaúj-Zemplén) the high emissions are attributed to the larger population and the outdated building stock.

Figure 1 Annual CO_2 emissions of counties in 2015

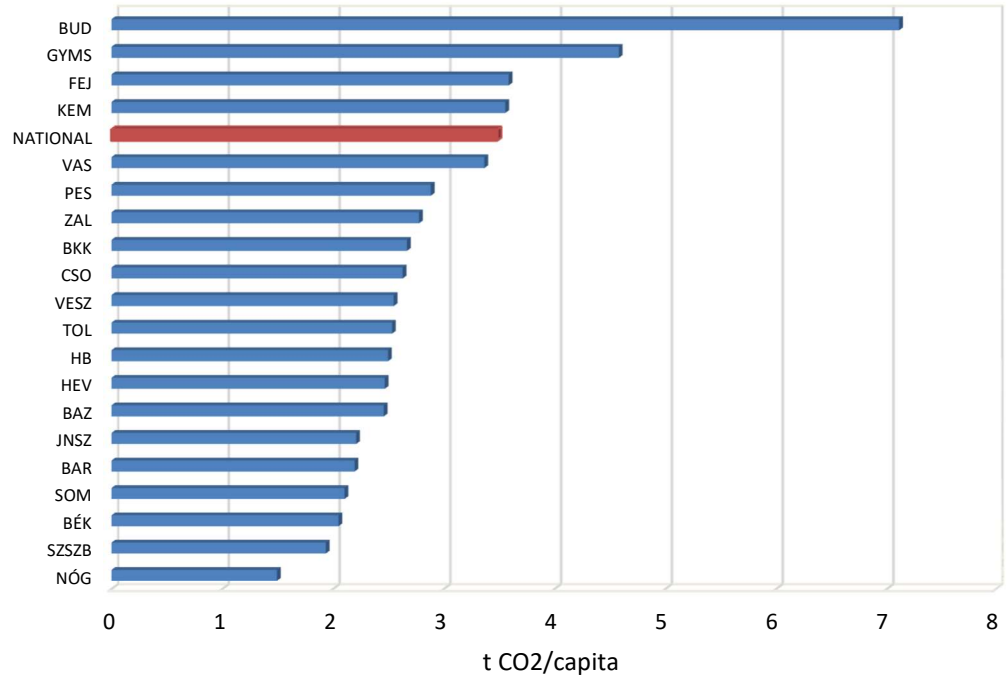


Source: own work

Looking at the last county, the building stock is not more advanced, but the population is smaller and the productive sectors (such as services, industry) is rather weak in Zala, Baranya, Heves, Tolna and Nógrád counties. As it is shown by Zhou, Liu, Wu, and Li (2015) the urbanization processes in Pest, Győr-Moson-Sopron and Fejér counties are also form driving factors of relatively high emissions.

Examining the specific carbon dioxide emissions of the counties (Fig. 2), we concluded that most of the counties were below the national average.

Figure 2 Specific CO2 emissions of counties

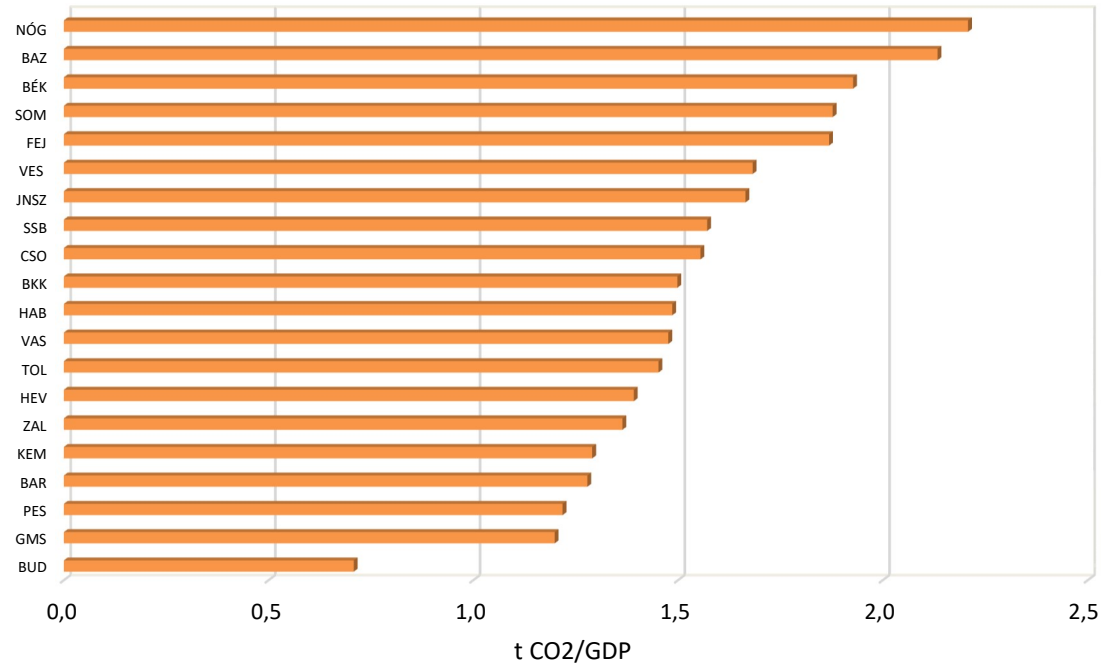


Source: own work

The chart includes emissions from the SME sector, but not from the heavy industry. This is because ETS (emissions trading system) mandatory quota trading applies to large-scale companies. In these companies, there is no intention to reduce CO2 emissions, as the quota set by the European Union is mandatory for them, which the EU has reduced year by year. As a result, companies that produce less CO2 can sell excess quotas on a market basis to larger emission companies. In Hungary, approximately 250 facilities are in the ETS. According to the chart, mobility as a key factor must be highlighted, as transport significantly raises specific emissions, mainly in the counties of Fejér, Győr-Moson-Sopron and Borsod-Abaúj-Zemplén.

We also examined the carbon intensities of county's GHG emissions. (Fig.3).

Figure 3 Carbon intensity (t CO2/GDP) of the counties

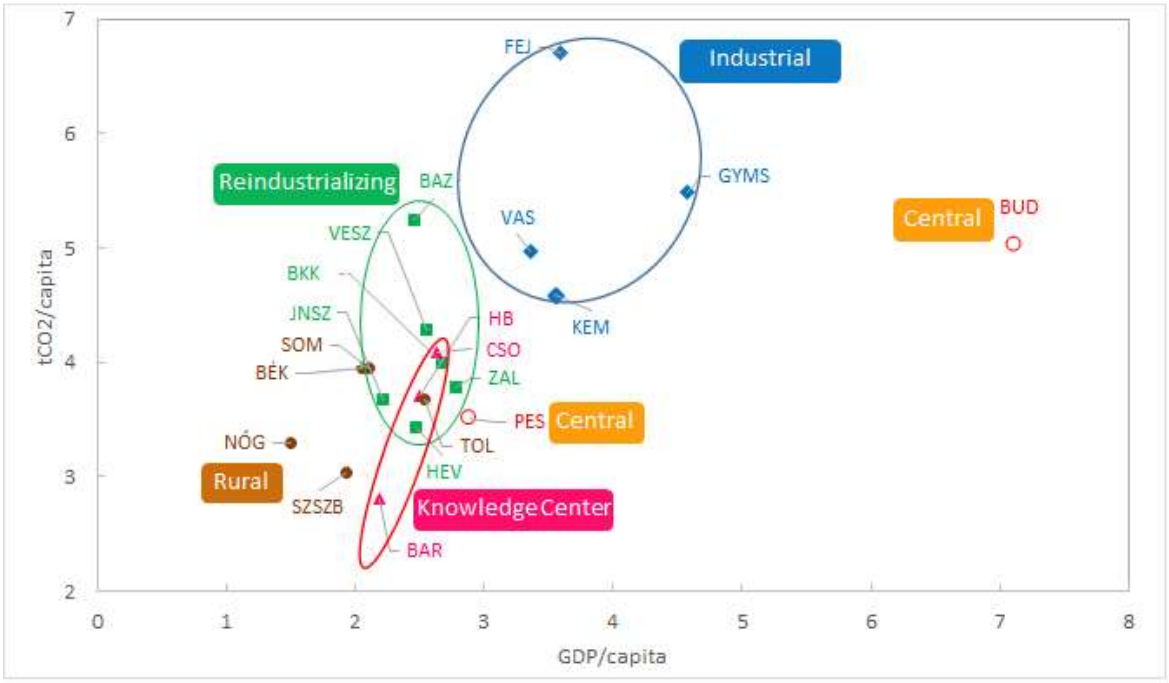


Source: own work

In counties with relatively low county GDP, this index is high, such as the counties of Békés and Somogy. Where the county GDP is high (Budapest, Győr-Moson-Sopron, Pest counties) this index is lower. In the case of Fejér and Veszprém counties the GDP is not low, but it is rather average, but their output is very high. Although the carbon intensity indicator is widely used, but its driving factor is mainly based on GDP so more economic effects are accumulated in the results.

We also identified the relationship between county development typology and specific emissions. As it is shown in Tab. 2, the counties were clustered into 5 types: central, industrial, re-industrializing, knowledge-center and rural.

Figure 4 Relationship between the economic development (GDP / capita) and specific CO2 emissions (t [CO2] / capita) of mixed types



Source: own work

Strong relationships among the county's socio-economic conditions and county's CO2 emissions are revealed. One of the key factor of this relation is the composition and status of NUTS-3 level household's building stock. Almost 30% of the total CO2 emissions are attributed to household's heating. The heating demands depend on the status of thermal insulations and In certain rural regions in Hungary the energy poverty is the main factor of household's energy consumption. A widespread practice to minimize the energy costs that certain rooms are not heated and the "remaining" heating is provided by fuel wood or illegal fuels (such as waste and plastics.) (Ürge-Vorsatz & Herrero, 2012). This environmentally harmful and health risky heating practice may cause a "virtual" energy saving (i.e. less energy consumption in the energy statistics) and less heating-related CO2 emissions. Therefore, the less developed rural county's (such as Nógrád, Baranya, Szabolcs-Szatmár-Bereg Counties) can be attributed by the lowest per capita emissions.

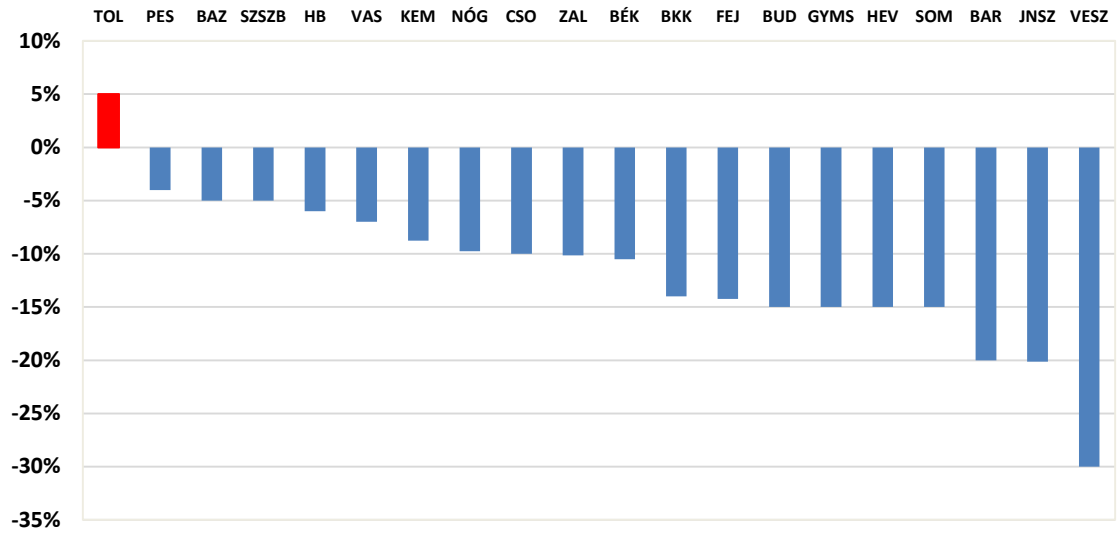
Another important factor of county's emissions and socio-economic conditions is the role of transport demands and welfare effects. The second major source of CO2 emissions is the road

transport, the growth rate exceeds 5% per year since 2014, in Hungary. Those counties which have significant development in processing industry and service sector (such as automotive assembling or commercial activities) their freight transport-related CO2 emissions are also increased. In parallel with their relatively developed economic status, social welfare indicators also show prosperous performances in certain Trans-Danubian Counties (such as Budapest, Győr-Sopron-Moson, Fejér Counties). In case of these developed counties, CO2 emissions related to transportation of goods, household's energy consumption and use of cars are also more intensive which cause highest per capita emissions.

It is also noticeable that the most favourable area would be high GDP low emissions, with the closest areas to the center, highlighting Budapest. The counties belonging to the manufacturing industry are characterized by high GDP, but this is accompanied by too high emissions, which is not sustainable. The knowledge center and re-cultivating and rural-type counties emit less, but their GDP is relatively low. They should move horizontally in the development of the chart, taking sustainability into account, i.e. to increase GDP so that their specific emissions do not increase.

Finally, we made a comparative assessment of county's decarbonization targets. Overall, county commitments can be found between 5-20% compared to base years. In 13 counties, commitments with a rather low level of ambition have been made; reduction commitments were lower than 15%.

Figure 5 County decarbonization targets (quantified emission reduction commitments) for 2030

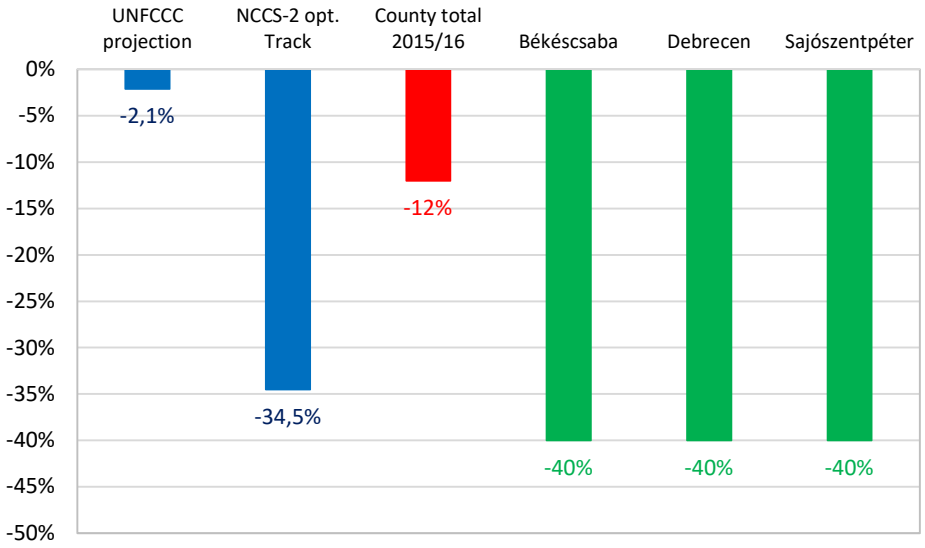


Source: own work

It has been revealed that county's commitments do not adequately reflect their economic development. It also means that there is a lack of consistency between present emission and its

GDP-related position. This is due to the fact that quantified emission reduction commitments are not yet well established, there is no appropriate policy or development-related justification for county commitments. Fig. 5. shows clearly that different counties have differentiated commitments by 2030. In the case of commitments by 2020, it does not reach 6% in 18 counties. By 2050, the counties did not make very ambitious commitments, and 6 counties did not undertake, while others committed a 10-40% reduction in CO2 emissions to the base year.

Figure 6: CO_2 emission projections, county and city commitments by 2030



Source: own work

Fig. 6. illustrates that there are more serious ambitions for emission reductions in SECAP documents approved by municipalities. Emissions are concentrated in cities, so it is very encouraging that they are dealing with this problem. The second National Climate Change Strategy (NÉS2) contains 34.5% national commitment of reduction. In fact, this is the path for optimal emission reduction. All countries must submit reports to the UNFCCC (Framework Convention on Climate Change), based on the most recently submitted document, a 2.1% Hungarian commitment, but it is important to point out that this is a “wors case” projection. It can be seen that the counties are in an intermediate state with regard to the objectives.

CONCLUSION

On the basis of climate change strategies recently adopted by county’s municipalities, the regional structure of NUTS-3 level greenhouse gas emissions as well as county’s mid-term decarbonization targets and mitigation actions have been analyzed. The results may be regarded as a first attempt to specify the spatial characters of the greenhouse gas emissions and related

policy options in Hungary. We summarize the major consequences in the following four conlusions.

1. Target settings for decarbonization. One of the most important policy-related elements of county's climate change strategies are the quantified emission reduction objectives for 2030. Decarbonization measures may also contribute in regional economic development and improvement of competitiveness (Zsibók & Sebestyén, 2017). The decarbonization target value is a comparable, easy-to-communicate indicator which should directly contribute in national level greenhouse gas emission reduction commitments. It has also been revealed that county's contribution to national commitments outlined in Second National Climate Change strategy are generally insufficient. Some cities and towns have stronger ambitions in emission reduction stated in their SECAP documents which highlights the importance of climate change policy coordination between the counties and their cities. We have found that no characteristic spatial distribution is shown in county's pledges. Although, the set of decarbonization target should be based on estimation of mitigation costs, as well as consideration of financing potential of the major stakeholders (i.e. households, public utilities, municipalities) the approved decarbonization target values do not reflect the county's economic and fiscal positions. During the decision making process related to target settings the municipalities paid less attention to the objective cost figures and the dominant decision-driving factor probable based on political prudentialism (i.e. "lower target brings less problems"). Certain guidance rules on recommended county's pledges from the national climate policy makers were also missing.
Enabling policy framework for financing and implementing mitigation actions are also important. County's climate change strategies envisaged a broad array of various mitigation measures providing innovative, cost effective way to reduce the greenhouse gas emissions. Majority of counties planned certain "common and preferred" mitigation actions, such as awareness rising and education, grant scheme for housing and public sector's investments in renewables and energy efficiency improvements. Further researches are needed to identify the general typology of mitigation measures and to develop a comprehensive municipal-level climate change policy performance index. Dissemination of best examples and experiences gained should also be a possible extension of the strategy making.

2. Development of methodology for county's climate change strategy making. As it is mentioned above, preparation of county's climate change strategies was guided by a common methodology, certain weakness and room for improvements have been identified during the quality control (Pálvölgyi and Czira, 2018). An important gap is the lack of estimation on

emission reduction of the planned mitigation measures. Without bottom-up indicators of mitigation performance at level of individual measures, their contribution in county's quantified reduction target is generally unknown. Assessing the transport related emissions should also be improved, especially in case of estimation of transit freight trafic. Forests provide significant ecosystem services in national and regional level and reforestation is an important indicator of sustainable land use at county-level as well. Presently, the estimation of carbon removal is limited in methodological scope and enhance of sink capacites by afforestation measures are almost missing. There are many other minor gaps and challenges of methodological improvement which should be solved during the revision of strategy making guidelines under the implementation of Second National Climate Change Strategy in next few years.

3. Implication for regional sustainable development. One of the most important challenge ahead our regional decision making is to provide an adequate policy framework for transition to sustainable development. According to National Framework Strategy for Sustainable Development (NFSSD, 2013), renewed municipality level planning tools are necessary to achieve sustainable development goals, including poverty alleviation and mitigation of climate change. The county's municipalities have a unique role to play in creating opportunities to integrate decarbonization targets into settlement's development strategies and promoting the territorial cohesion (Lennert, Csatári, Farkas & Mezőszentgyörgyi, 2015). For example, the county level CO2 reduction target setting or recommended mitigation measures may form important guiding dimensions for settlement level "Smart City" concepts and SECAPs. While this paper focuses on regional characteristics of climate change mitigation, the general approach may be applied to other regional level policies, including energy efficiency improvement and utilization of renewable energy sources. Territorial impact assessment (TIA) may be regarded as an effective tool of the policy integration of county's decarbonization policies into their settlement's strategy planning (Camagni, 2017). Although, county's municipalities have no direct "command-and-control" function in settlement's governance, their new roles (Hoffman, 2018) may also promote transition to sustainable development by guiding the settlement's climate change policies. Finally, the importance of forests in county's climate change policies should be highlighted. Forests currently absorb billions of tons of CO2 globally every year. Consequently, the forests contribute to climate change protection through this process. Large-scale conversion of forestry and, in particular, afforestation and land use can lead to unwanted environmental and socio-economic impacts that could jeopardize the overall value of carbon reduction projects. (Canadell & Raupach, 2008)

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TALENT MANAGEMENT OF ACADEMICS: A SYSTEMATIC LITERATURE REVIEW AND IMPLICATIONS FOR FURTHER RESEARCH IN HUNGARY

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Abstract

Talent management (TM) has become a key business issue recently, while finding and keeping talents are also crucial in higher education (HE). However, no study summarizes the knowledge on TM of academics. Hence, we conducted a comprehensive systematic literature review searching for existing knowledge about and common processes of TM in HE, and the specialties of TM of academics. We searched for all publications on TM related to academia in Web of Science and Scopus. Non-English and non-article items were excluded resulting in 68 and 108 items, respectively. Eventually, 26 articles were found relevant for a deeper analysis. Besides descriptive statistical analyses, we reviewed the articles in light of our suggested new process-based TM model, which is based on Gagné's work. Findings advance the field by enhancing its theoretical bases, summarizing current knowledge, and posing important questions for future research, while also offering a model as an underlying structure.

Keywords: talent management, human resource management, literature review, academics, higher education, universities

INTRODUCTION

During the past two decades, talent management (TM) has become a key management issue as human resources management (HRM) activities scoping the talented employees are playing a crucial role in the successful operation of organizations (Bethke-Langenegger, Mahler, & Staffelbach, 2011; Bhattacharya, Sen, & Korschun, 2008; McCracken, Currie, & Harrison, 2016). Several studies found that finding and keeping talented people is the "single most important managerial preoccupation for this decade" (Thunnissen et al., 2013, p. 1744) and these authors also expect that the growing competition for talent will have major effects on organizations. Furthermore, TM "highlights the unequivocal value of talent as a competitive weapon" (Mellahi & Collings, 2010, p. 143) and in our ever-changing

environment there is a growing need for such a weapon in order to gain some kind of a competitive advantage and keep it for as long as possible.

However, the significance of attracting and retaining talented employees is not only vital, but also poses huge challenges on organizations (Cappelli, 2008; Farndale, Scullion, & Sparrow, 2010; Schuler, Jackson, & Tarique, 2011) and only a very small proportion of corporations (5%) consider their TM activities to be very effective (CIPD, 2015, p. 21). In addition, some recent studies have highlighted the need for the integrated handling of knowledge management (KM) and TM, using the term 'smart talent management' (e.g., Vance & Vaiman, 2008; Whelan & Carcary, 2011).

In the era of globalization, the quest for talented people is not any less true for institutions of higher education (HE) than for any other (business) organization. As Singh and Singh (2015, p. 751) put it, "it is not only industries these days but educational institutes as well who are keen in maintaining key performers". This notion is also supported by the growing number of publications that examine TM in various HE settings. There is no publication at all on TM in HE in the Web of Science (WoS) and Scopus databases before 2010. Between 2010 and 2015 12 articles, while in the next three years (2016-2018) 14 articles were published in the WoS and Scopus databases.

In addition, HE institutions are seen to be part of knowledge networks, should act as agents of knowledge transfer and consequently foster creativity and also innovation. Furthermore, "attracting and retaining quality faculty is very important to educational institutions as a low faculty retention rate might create both monetary and academic consequences" (Rensselaer Polytechnic Institute, 2012). (cp. van den Brink, Fruytier, & Thunnissen, 2013) And it has to be acknowledged that knowledge workers are incredibly mobile today and if they are not feeling fulfilled or come across better opportunities, they just go elsewhere (O'Bryan & Casey, 2017). In the meantime, the composition and quality of academic stuff is an essential component of the quality of education and research as well as the reputation and competitive position of HE institutions. (van den Brink et al., 2013)

However, we could not find any studies summarizing already existing knowledge regarding TM of academics. Furthermore, TM literature is frequently criticized for lacking sound theoretical bases (Collings & Mellahi, 2009; Dries, 2013; Gallardo-Gallardo & Thunnissen, 2016; Iles, Chuai, & Preece, 2010; Thunnissen et al., 2013). Hence, the purpose

of this study is to present the results of a comprehensive systematic literature review on TM of academics.

The following research questions (RQs) were the starting points of the research presented in this paper.

RQ1: What can be observed regarding TM and TM processes in HE (based on the literature available in Web of Science (WoS) and Scopus)?

RQ2: Are there any special characteristics of TM of academics?

RQ3: What are the most common TM processes and/or practices in academic institutions?

The article is structured as follows. The next section briefly reviews relevant literature on TM; followed by the methods employed in our study. We, then, present the results of our qualitative data analysis. The subsequent section is dedicated to our key findings and conclusions, while future research questions and a summary makes the study complete.

THEORETICAL BACKGROUND

What is talent?

The concepts of talent and TM are interrelated, at first, we briefly review the former. There are several different definitions and tensions of talent available in the literature (e.g., Dries, 2013). One of these talent tensions is the inclusive-exclusive approach, which is essential regarding the main topic of this work, namely TM. According to the inclusive approach (e.g., Silzer & Dowell, 2009, p. 14), all employees are talented (in somewhat), or as Lewis and Heckman (2006, p. 141) put it: "'talent' is essentially a euphemism for 'people'". Meanwhile, the exclusive approach differentiates the employees (Gallardo-Gallardo, Dries, & González-Cruz, 2013). In current HRM practice, talent interpretations tend to follow this exclusive approach (e.g., Gallardo-Gallardo & Thunnissen, 2016), and they most often contain superior skills, commitment and above average performance—similarly to Renzulli's influential conceptualization.

According to Joseph S. Renzulli's (1978, 2011, 2016) Three-Ring Conception of Giftedness, which is one of the most seminal scientific talent definitions despite originating from an educational context, talent is in the section of 'above average abilities' (both general abilities (e.g., general intelligence) and specific abilities (e.g., the capacity to acquire

knowledge of a given field)); high level of 'creativity' (all the traits that belong to the general heading of creativity (e.g., potential of creative accomplishments, originality of thinking); and high level of 'task commitment' (endurance, perseverance, hard work, etc.)—all of which are equally important.

However, many authors follow the exclusive approach. For instance, according to Michaels III, Handfield-Jones, and Axelrod (2001, p. xii): talent is "the sum of a person's abilities—his or her intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character and drive. It also includes his or her ability to learn and grow."

According to Ulrich and Smallwood (2012, p. 60): "Talent = competence × commitment × contribution" where competence refers to knowledge, skills and values required for todays' and tomorrows' job; right skills, right place, right job, right time, commitment means willing to do the job, and contribution is finding meaning and purpose in their job.

Renzulli's original model (1978) did not contain any external factors (and their effects), however, its latest update refers to the model's "Houndstooth background" as a representation of the "interaction between personality and environmental factors that give rise to the three rings" (Renzulli, 2016, p. 67). Since then, many complex talent structures with external factors have been developed, for instance, in Gagné's (1995, 2004, 2009a, 2009b, 2010a, 2010b) model. Even though in the original version of the Differentiated Model of Giftedness and Talent (DMGT), milieu, persons, provisions, and events are mentioned as external factors, while the updated DMGT 2.0 version contains only the first three of them.

Gagné's (2010b) model is also important because it builds on the distinction between two important concepts: gifts (outstanding natural abilities) and talents (outstanding knowledge and skills). Natural abilities (gifts) can be transformed into various competencies (talents) through the developmental process, while "two types of catalysts, intrapersonal and environmental, actively moderate" this process. (Gagné, 2010b)

What is TM?

There is still a debate about the exact meaning of TM in the literature, and there is no single, universally accepted definition or model of TM; however, several well-defined approaches

can be distinguished (Iles, Chuai, and Preece, 2010; Lewis & Heckman, 2006; Mellahi & Collings, 2010). Hereby we only briefly discuss the most influential ones.

One of the most cited sources in TM literature is Lewis and Heckman's (2006, p. 140) work. Referring to several other researchers' works, they identified "three distinct strains of thought regarding TM": The first of which defines TM as a collection of HRM practices, functions, activities such as recruiting, selection or development. The second focuses primarily on the concept of talent pools, while the third "focuses on talent generically; that is, without regard for organizational boundaries or specific positions". Within this perspective there are further two views. One regards talent "(which typically means high performing and high potential talent) as an unqualified good and a resource to be managed primarily according to performance levels." (cf. "A", "B", and "C" players by Michaels, Handfield-Jones, and Axelrod (2001)) The second perspective regards talent as "an undifferentiated good and emerges from both the humanistic and demographic perspectives."

Collings and Mellahi (2009) refer to the three streams identified by Lewis and Heckman's (2006) work; although, they omitted the second perspective of the third strand and only mention its exclusive side also noting that this approach alone is not beneficial. In addition to these three streams, Collings and Mellahi (2009) added a fourth one, "which emphasises the identification of key positions which have the potential to differentially impact the competitive advantage of the firm (Boudreau & Ramstad, 2005; Huselid et al., 2005). The starting point here is identification of key positions rather than talented individuals per se." Their later work (Mellahi & Collings, 2010) also refer to the same four dimensions.

Another often cited source is Iles et al.'s (2010) work – they also distinguished three "three broad strands of thought regarding TM", noting that "Lewis & Heckman, 2006 present a related, but somewhat different analysis": "(1) TM is not essentially different from HRM; (…) (2) TM is integrated HRM with a selective focus; (…) (3) TM is organizationally focussed competence development through managing flows of talent through the organization; the focus here is on talent pipelines rather than talent pools."

Additionally, Iles et al. (2010) distinguished so-called perspectives on TM, naming one axis of their four-quadrant model "exclusive versus inclusive people focus", while the other "focus upon organizational positions as against the people themselves".

In our holistic viewpoint, TM should include certain processes to ensure the development of talents with natural abilities (gifts) into high performer, talented employees.

The concepts of 'academia' and 'academics'

Due to their significance regarding this research, the meaning of academia and academics needs to be discussed as well.

Determining the meaning of academics is not so straightforward. In the literature, there are several different expressions about the personnel in academia, for example, academic workforce, academic scholars, faculty staff or members or personnel, teaching and researching staff, support staff, lecturers, researchers, university staff. It is quite surprising that such a fundamental and well-known book like The International Encyclopedia of Higher Education (Knowles, 1978) does not contain academic or academia as headwords. The description of other items may provide some information indirectly, for example, the detailed explanation of Academic Tenure mentions teaching careers and career teachers (Knowles, 1978, p. 49).

In our viewpoint, all employees of a higher educational organization are members of the category of 'academics'. We use academia and HE interchangeably, meaning that academia covers all aspects of HE.

DATA AND METHODS

With the aim of conducting a comprehensive review, we searched for publications in the complete WoS and Scopus databases. Our search string was: ("talent management" AND (adacemi* OR "higher education" OR universit*))[13] in the topic field (containing the Title, Abstract, Author Keywords, and Keywords Plus®) in WoS and in the Article title, Abstract, Keywords fields in Scopus with no restrictive conditions on the date of publication. Non-English and non-article items (except for review articles) were excluded, which resulted in 68 (WoS) + 108 (Scopus) items. Data collection was closed on September 30, 2018.

Due to the overlapping of the two databases, eventually 124 articles remained for review. Out of these, a manually conducted filtering process identified that only 26 articles were

[13] The quotation marks refer to joint occurrence of the given words, and the asterisk refers to all the possible endings of that word.

actually relevant for analysis based on their contents as many of them covered topics other than TM related to academic personnel. Thus, we analyzed 26 articles in detail.

RESULTS

Interpretations of 'academics' throughout the examined sources

The first problem we encountered when wanting to conduct this research was regarding the operationalization of 'academics'. Some of the examined sources (e.g., van Balen, van Arensbergen, van Der Weijden, & van Den Besselaar, 2012; van den Brink et al., 2013) refer to teaching and research staff as academics, some (e.g., Barginere, Franco, & Wallace, 2013; Oppong & Oduro-Asabere, 2018) include university support staff as well, while others (e.g., Erasmus, Naidoo, & Joubert, 2017; O'Bryan & Casey, 2017) do not really specify what they mean when they speak about, for instance, "all university staff" (Lim & Boey, 2013) or "faculty members" (Eghbal, Hoveida, Seyadat Seyedali, Samavatiyan, & Yarmokhammadian, 2017). Fig. 1 summarizes these theoretical possibilities: either all or some of those who perform teaching, research, and support tasks (e.g., librarians) could be taken as academics at a given HE institution. Such operationalizations depend on how given researchers see such matters as well on the specificities of the institutional system of HE, which may vary from country to country.

Figure 1 Types of activities potentially defining how the concept of academics is operationalized

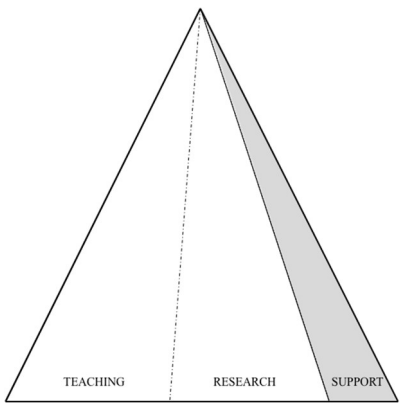
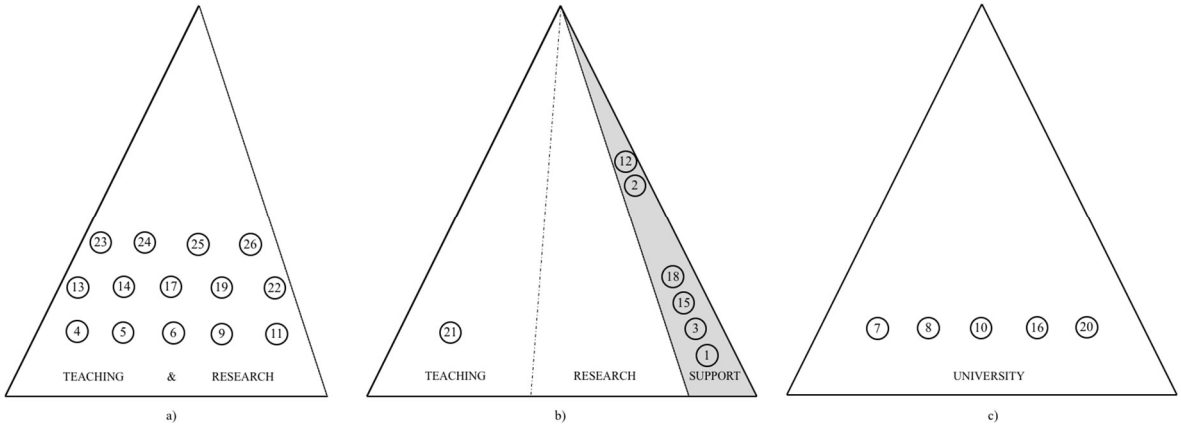


Figure 1 only means to indicate that these different types of activities and HE staff can co-exist and together they can be labelled "all university staff". And also any subsection of

Figure 1 can also be referred to as HE staff or academics. As the purpose of this article was to review the literature, here we would only want to emphasize that such differences exist.

Fig. 2 presents the results of our analysis regarding the conceptualizations of academics across the 26 examined articles. The circled numbers refer to the article numbers as shown in the first column in Tab. 1 (e.g., "1" in Fig. 2 refers to Badia (2015) and so on). As shown in Fig. 2a), there is a group of the analyzed articles that discuss only teaching and research staff related issues together, without more distinctions on employees. Others focused on or included support staff separately, while in one case teaching staff was mentioned solely (Fig. 2b). 5 articles did not specify any further the employees than, for example, "university staff" (Fig. 2c).

Figure 2 Results of the analysis of how the concept of academics is operationalized in the examined 26 articles



Tab. 1 summarizes some of the findings of our review. Here we would like to highlight that in line with the variedness of the operationalization of the concept of academics, the areas of study of the examined articles are also diversified ranging from academia through academic libraries and HE to medical schools.

Table 1 Summary of the literature review on TM of Academics

	Author(s)	TM		Main topic / concept / problem	Area (as it occurs in the text)	Specific subjects of focus (as it occurs in the text)	Country	University/ organization	Methodology						Data / Sources	
									Conceptual			Empirical				
		In focus	Mar-ginal						Review / Commentary	Theory Building	Model / Framework	Case Study	Survey / Ques.	Other qual. (e.g., interview)	Secon-dary	Pri-mary
1.	Badia (2015)		x	Leadership of librarians	Academic libraries	Academic library staff members	Canada	McGill University Library, Schulich Library of Science & Engineering, SLA's Engineering Division	x			x			x	x
2.	Barginere et al. (2013)		x	Succession Planning, Leadership	Nursing	Nursing leadership team	USA	Rush University Medical Center			x	x			x	x
3.	Barkhuizen, Mogwere, & Schutte (2014)	x		TM and work engagement, service quality orientation	Higher education	Support staff	South Africa	1 South African higher education institution					N=60		x	x
4.	Barkhuizen, Roodt, & Schutte (2014)	x		TM: job demands vs job resources	Higher education	Skilled and competent academic workforce	South Africa	South African higher education institutions					N= 146		x	x
5.	Bradley (2016)	x		TM for universities	HE sector	Academic staff (teaching and research roles)	Australia	-	x						x	-
6.	Eghbal et al. (2017)	x		TM, research performance, organizational justice	Universities	Faculty members	Iran	3 Iranian universities: University of Isfahan (UI), Isfahan University of Medical Sciences (IUMS) and the Isfahan University of Technology (IUT)			x		N= 130		x	x

Table 1 (continued)

7.	Erasmus et al. (2017)	x		TM practices, implementation	(Online) Academic context	Senior line managers (2 academics + 9 support staff)	South Africa	University of South Africa (Unisa)						N=11	x	x
8.	Lim & Boey (2013)		x	Institutional management of 1 university	University	All university staff	Singapore	Nanyang Technological University (NTU)				x			x	x
9.	Mohan, Muthaly, & Annakis (2015)	x		TM: Talent development	Universities	Academics from 3 GLCs Universities	Malaysia	3 Malaysian Government Linked Companies (GLCs) Universities: Universiti Tenaga Malaysia (UNITEN), Universiti Teknologi Petronas (UTP), Multimedia University of Malaysia (MMU)			x		N= 168		x	x
10.	O'Bryan & Casey (2017)	x		TM: Hiring and Developing Engaged Employees	Higher education and libraries	Knowledge workers of HE and libraries	USA	-			x				x	-
11.	Oludayo, Akanbi, Obot, Popoola, & Atayero (2018)	x		TM: Talent retention	University	Academic staff of Covenant University	Nigeria	Covenant University					N= 152		x	x
12.	Oppong & Oduro-Asabere (2018)	x		TM: Succession planning, directorship roles, identification	University	Non-academic senior members of directorship roles	Ghana	1 Ghanaian university: University of Cape Coast (UCC)						N=9	x	x
13.	Paisey & Paisey (2018)	x		TM: recruitment, in academia in accounting	University	Accounting academics	Scotland, Republic of Ireland	9 universities in Scotland, and 5 in the Republic of Ireland						N=14	x	x

Table 1 (continued)

14.	Palmer, Hoffmann-Longtin, Walvoord, Bogdewic, & Dankoski (2015)		x	Competency management	Academic health center	Department chairs of Academic health centers	USA	Indiana University School of Medicine				x			x	x
15.	Peet, Walsh, Sober, & Rawak (2010)	x		TM: Knowledge transfer, Generative Knowledge Interviewing, Leadership development	University	A small group of fund-raising leaders and experts at University of Michigan	USA	University of Michigan						N=7	x	x
16.	Rastgoo (2016)	x		TM and organizational development, job motivation	University	All employees in educational, research, student, and cultural deputies of Bushehr University	Iran	Bushehr University			x		N= 170		x	x
17.	Rayburn, Grigsby, & Brubaker (2016)		x	Succession planning for department chairs	Medical schools	Department chairs of medical schools	USA	US medical schools	x						x	x
18.	Rutledge, LeMire, Hawks, & Mowdood (2016)	x		TM: Competency-based TM	Academic library	Library employees	USA	1 academic library: University of Utah's J. Willard Marriott Library				x			x	x
19.	Saddozai, Hui, Akram, Khan, & Memon (2017)	x		TM practices, implementation	Academia	Academic staff at government owned universities of China and Pakistan	China, Pakistan	5 Chinese and 5 Pakistani government owned universities						N=260	x	x
20.	Salau et al. (2018)	x		TM practices in 1 university	University	Academic staff (teaching and non-teaching employees working there for min 2 years) in a technology-driven private university	Nigeria	Covenant University			x		N= 313		x	x

21.	Singh & Singh (2015)	x		TM: Talent quotient for Indian management teachers	Higher education	Management teachers in India	India	26 Indian management colleges/ management department/ business schools					N=15 +205		x	x
22.	Thunnissen (2016)	x		TM practices in universities	Universities Table 1 **(continued)**	Academic staff	Netherlands	Dutch publicly funded universities, 5 departments					N= 48	N= 110+60	x	x
23.	Thunnissen & Van Arensbergen (2015)	x		TM: Definition of academic talent, multi-dimensional approach to talent	Higher education	Academics	Netherlands	5 Dutch universities 1-1 departments			x			N= 100+29	x	x
24.	van Balen et al. (2012)	x		TM: Career management	Higher education	Academics, academic scholars	Netherlands	Dutch universities				x		N=42	x	x
25.	van den Brink et al. (2013)	x		TM: Definition of academic talent, Performance management	Higher education	Junior and senior academic talents	Netherlands	7+5 Dutch universities				x		N=64+ 25+30	x	-
26.	van der Weijden, Teelken, de Boer, & Drost (2016)	x		TM: Career management	Higher education	Postdoctoral researchers	Netherlands	2 Dutch universities					N= 225		x	x

TM of academics

A further issue we had to solve during the research process was the conceptualization of "TM of academics".

For the purposes of this article, our conceptualization for TM of academics is the following: articles that cover topics of (or are related to) TM in HE institutions regarding teaching, research and/or support staff. Consequently, articles exploring TM in other fields, for instance, HE graduates or schools were labelled irrelevant regarding our research questions and were not examined any further.

Analyzing the 26 articles, we found that in 21 publications (81%) TM was a central topic, while in 5 articles (19%) TM was only marginally concerned. These 5 articles focused primarily on such topics as leadership, succession planning, university management, and competency management. 23 (86%) of the examined articles contained empirical analyses covering various regions of the world from China, through Ghana to the Netherlands and the US. (For more details see Tab. 1.)

Regarding the conceptualization of TM, we found that only 14 (54%) of the examined articles contained some kind of definition of TM, but 20 articles (77%) mentioned TM processes at least. Tab. 2 presents the results of the collection of all the TM definitions and TM processes from the examined articles.

As shown in Tab. 2, we found that in the examined articles all the aforementioned well-known TM approaches are present.

Table 2 Summary of TM definitions and processes in the examined sources on TM of academics

	Author(s)	What is TM?	TM processes
1.	Badia (2015)	-	-
2.	Barginere et al. (2013)	Talent management is a comprehensive concept defined, at RUMC, as recruitment development, promotion and retention of people, planned, and executed in line with the organization's current and future business goals. (p. 68)	-
3.	Barkhuizen, Mogwere, & Schutte (2014)	Talent management can be defined as the implementation of integrated human resource strategies to attract, develop, retain and productively utilize employees with the required skills and abilities to meet current and future business needs (Kontoghiorges & Frangou, 2009). (p. 70)	attract, develop and retain talented employees (p. 69)
4.	Barkhuizen, Roodt, & Schutte (2014)	-	attract and retain quality staff members (p. 2037)

Table 2 (continued)

	Author(s)	What is TM?	TM processes
5.	Bradley (2016)	Lewis and Heckman (2006) and Collings and Mellahi (2009) develop frameworks for talent management that define it with explicit connections between talent and strategy and so view talent management as the 'architecture' required to develop and sustain competitive advantage. Specifically, they define talent management as an organisational system (or culture) that: 1. Identifies key positions that differentially contribute (add value) to the organisation's competitive advantage; 2. Develops a talent pool of high potential and/or high performing individuals to fill these positions; and 3. Develops human resource systems to facilitate the alignment of talented individuals, key positions and organisational strategy. (p. 14)	Recruitment, development, retainment and reward of academic talent TM's alignment with strategy, metrics, and management
6.	Eghbal et al. (2017)	Sweem [Sweem, 2009] believes that talent management is an intelligent approach to the attraction, development and retention of experts and the use of their talents and competencies to meet an organization's needs and achieve present and future goals. Talent management is a collection of designed processes that guarantee employees' proper placement at an organization. In other words, the right person will be in the right job at the right time. (p. 84)	A model designed by Peter Cheese, Robert Joseph Thomas, and Elizabeth Craig [Cheese et al., 2008] in this field includes five main components that indirectly cover other models (p. 84-85): Defining and identifying talent needs Discovering talent sources Attracting talents Developing the potential abilities of talents Strategically deploying talents Retaining talents Evaluating and optimizing talent management Eghbal et al. [Eghbal et al., 2016] developed a model entitled "the management of gifted personnel at talent- centered universities". The authors identified two components in this process: the attraction and retention of talent, and state that after the discovery of talent, the two aforementioned components are the most important aspects of talent management. (p. 85)
7.	Erasmus et al. (2017)	Managing talent within an organisation has been identified as the lever capable of facilitating the attraction, development, and retention of the required skills and knowledge within the organisation through sound strategy, practices, and interventions (Schiemann, 2014). (p. 84) Al, Cascio, and Paauwe (2014) conceptualise TM as "those activities and processes that enable identification of positions and talent pools that are critical to building and sustaining an organisation's competitive advantage" (p. 174) (p. 84) Cappelli and Keller (2014) describe TM as "the process through which organisations anticipate and meet the needs for talent in strategic jobs" (p. 307). (p.85) Stahl et al.'s (2012) claim that "TM specifically involves attracting, selecting, developing and retaining high potential employees" (p. 38) and should not include all employees of any given organisation. (p. 85)	attraction (talent sourcing), development, deployment, and retention (p. 94)
8.	Lim & Boey (2013)	-	-
9.	Mohan, Muthaly, & Annakis (2015)	There are three major conflicting perspectives on TM within the literature. The first perspective defines TM as a collection of human resource cycles and functions (Byham, 2001; Chowanec & Newstrom, 1991; Heinen & O'Neill, 2004; Hilton, 2000; Mercer, 2005; Olsen, 2000; Boudreau & Ramstad, 2005; Lewis & Heckman, 2006), the second focusses on the development of talent culture as a deliberation of succession planning (Jackson & Schuler, 1990; Rothwell, 1994; Kesler,2002; Pascal, 2004; Ingham, 2006) and the third focusses on generic talent structured along the lines of competency (Buckingham & Vosburgh, 2001; Walker & Larocco, 2002). (p. 50)	talent identification, talent culture, competencies and talent development three prerequisites for effective TM: recognising and identifying key talents, developing a talented workforce and, motivating and retaining a competent and talented workforce to readily move into strategic and significant roles, (p. 50)

Table 2 (continued)

	Author(s)	What is TM?	TM processes
10.	O'Bryan & Casey (2017)	The scholarly literature identifies at least three distinct interpretations of talent management (TM). First, it is simply a new term for describing traditional HR practices. Traditional HR practices, similar to Schiemann's definition of talent, include identification of institutional need and the recruitment of employees, but fail to differentiate between "strategic roles within organizations over non-strategic ones." Secondly, TM can also refer to succession-planning practices. As Maltais writes, "One of the reasons companies invest in talent-management solutions is to make informed, data- driven workforce decisions and align talent with business objectives," which includes planning for the future as employees retire. … Because of the strategic nature of TM, these procedures need to "focus on hiring, developing, retaining, and engaging faculty, staff, and administrators who help the institution attain its goals." Last, TM should include the identification and management of talented employees currently in an organization's employ. Although early identification and engagement with employees is critical, this alone is not enough. The 2012 ASHE Higher Education Report article by Evans and Chun, lays out a "framework for strategic talent management in higher education with four focal areas of the employment experience for faculty and staff: (1) recruitment, outreach, and hiring; (2) affirmative action and diversity; (3) total rewards; and (4) employee engagement.15 It is no longer enough to just fill positions, staff classes and keep the lights on. "Talent acquisition through continuous sourcing, recruitment, and outreach processes is vital to institutional sustainability and organizational renewal in the public research university." Schachter echoes this in her advice to library managers to practice good hiring methods and effective performance management as well as budgeting annually for staff development programs, discovering what motivates staff, and engaging in retention and succession planning strategies. (p. 3-4) „Talent management is the way in which the talent lifecycle is managed." (p. 4)	Talent Lifecycle: "This ranges from building a talent brand that attracts the right talent to acquiring, onboarding, developing, managing, retaining and even recovering talent." (p. 4)
11.	Oludayo, Akanbi, Obot, Popoola, & Atayero (2018)	-	identifying, training and developing of talents (p. 700)
12.	Oppong & Oduro-Asabere (2018)	by Oppong (2015) talent management: a programme of identifying and developing potential employees for higher and/or critical positions) (p. 264)	-
13.	Paisey & Paisey (2018)	Scullion, Collings, and Caligiuri (2010, 106) define global talent management as including: all organizational activities for the purpose of attracting, selecting, developing, and retaining the best employees in the most strategic roles (those roles necessary to achieve organizational strategic priorities) on a global scale. (p. 3)	Talent management spans the employee lifecycle, from attracting and selecting employees to developing and retaining them (Scullion, Collings, and Caligiuri 2010; Stahl et al. 2012). (p. 1)
14.	Palmer, Hoffmann-Longtin, Walvoord, Bogdewic, & Dankoski (2015)	-	-
15.	Peet, Walsh, Sober, & Rawak (2010)	-	The Talent Management Team takes a holistic approach to recruiting, retention and training, which has more recently converged into the following areas: (1) creating a leadership pipeline for recruiting talented young people into the profession; (2) developing a culture of learning, knowledge-sharing and generation within OUD and the UM development community; and (3) identifying new programs to attract and retain great talent in the development community. (p. 74) Talent Management Cycle: Talent Acquisition, Talent Development, Talent Retention, and Talent Transition (p. 85)
16.	Rastgoo (2016)	Duttagupta (2005) believes that talent management originates from strategic management of talents flows in organization and its goal is to create an accessible source of talents for adapting the right individuals with the rights jobs and the right time based on the strategic purposes of business (Kaviani and Bahrami, 2013). (p. 654)	Dimensions of TM: Attraction of talents, Retaining talents, Management of talents, Identification and discovery of talents, Selecting and applying talents (Azari et al., 2014) (p. 654) Components of TM include attraction and recruitment of talented employees, identification and separation of talented employees, using talent, developing talent, creation and maintenance of positive relationships, and maintenance of talents. (p. 658)

Table 2 (continued)

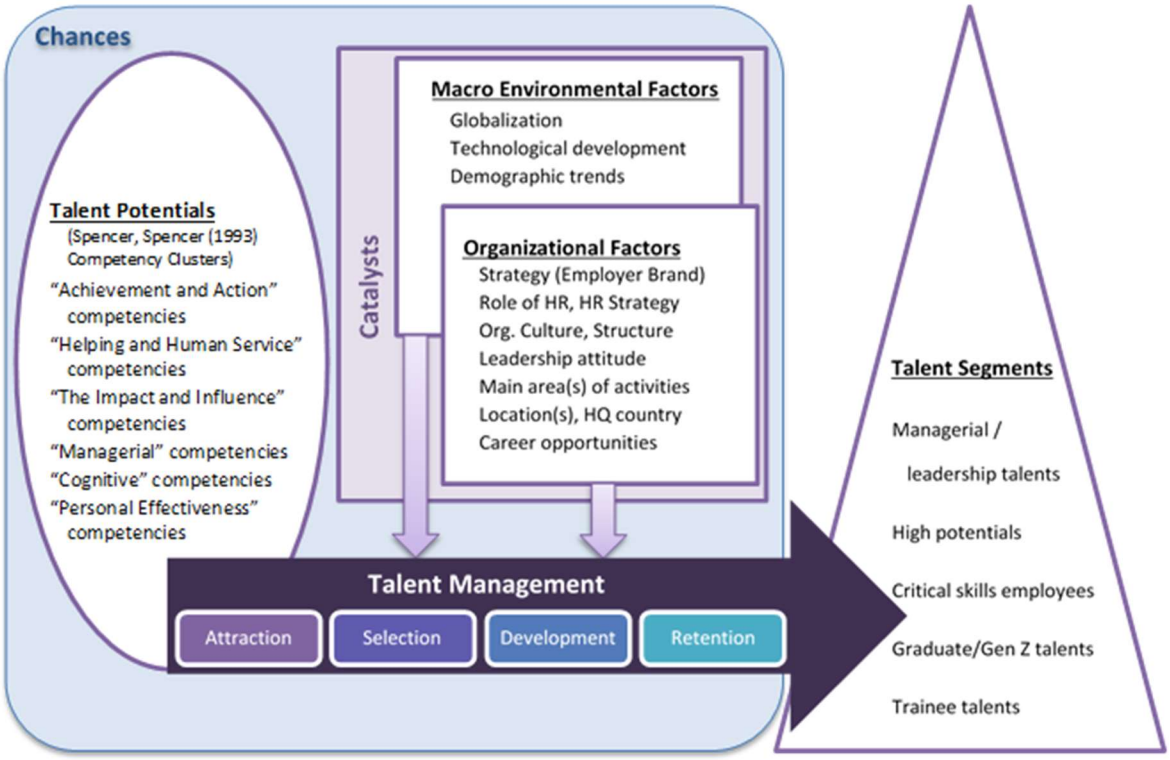
	Author(s)	What is TM?	TM processes
17.	Rayburn, Grigsby, & Brubaker (2016)	-	-
18.	Rutledge, LeMire, Hawks, & Mowdood (2016)	Talent management is defined as "an integrated set of processes, programs, and cultural norms in an organization designed and implemented to attract, develop, deploy, and retain talent to achieve strategic objectives and meet future business needs" (Silzer & Dowell, 2010, p. 18). (p. 236)	Talent-management activities include "recruitment and hiring, retention, employee engagement, job classification management, compensation management, performance assessment, competencies, professional development planning, and succession planning" (Taylor & Lee, 2014, p. 9). (p. 236-237)
19.	Saddozai, Hui, Akram, Khan, & Memon (2017)	TM basically focuses on the individuals who are identified by the management as a potential talent on which the organization can invest on for the future (Collings and Mellahi 2009; Valverde et al., 2013, pp. 1833-1834). (p. 539) TM in an educational organization is basically development of professional skills in teachers and administrators … (Uzma, 2010) (p. 541) According to the general consensus the view about TM is that it's basically an effective tool for identifying, recruiting, developing, retaining and managing key employees identified as talents but in a very small scale. (p. 547) Majority of respondents identified TM as identifying, recruiting, developing and retaining talents. About 15 respondents defined TM as capability building for a team, individual and organization. (p. 547-548)	In order to attract the talent companies and organization employ TM concept in order to identify, hire, develop and retain talents (Hatum, 2010, p. 124). (p. 539)
20.	Salau et al. (2018)	-	talent attraction (recruitment); talent development (capacity building) and talent retention (p. 1041)
21.	Singh & Singh (2015)	Also, talent management refers to the sourcing (finding talent); screening (sorting of qualified and unqualified applicants); selection (assessment/testing, interviewing, reference/background checking, etc., of applicants); on-boarding (offer generation/ acceptance, budging/ security, payroll, facilities, etc); retention (measures to keep the talent that contributes to the success of the organisation); development (training, growth assignments, etc); deployment (optimal assignment of staff to project, lateral opportunities, promotion, etc) and renewal of the workforce with analysis and planning as the adhesive, over-arching ingredient (Schweyer, 2004; CIPD, 2006; Ehsan et al., 2014). (p. 753) In other words, talent management is what occurs at the nexus of the hiring, development and workforce management process and can be described alternatively as talent optimisation. It is managing the entire employee life cycle, leadership development, succession planning and so on (Delong and Trautman, 2010). (p. 753) Thus, talent management is all about formulating successful talent strategies (Sears, 2003). (p. 753) Thus, it is the systematic cycle of planning, execution, and evaluation to manage the flow of talent into, through, and out of the organisation to achieve goals and meet needs. (p. 753)	hunting, acquiring, developing and retaining best talent (p. 751) In a nutshell talent management rests on the four pillars; viz. recruitment management, performance management, learning management and compensation management. (p. 753)
22.	Thunnissen (2016)	TM is often described as the systematic attraction, identification, development, engagement/retention and deployment of talents (e.g. Scullion et al., 2010) (p. 58)	Selection and recruitment, and Development, performance and promotion practices (p. 65-66)
23.	Thunnissen & Van Arensbergen (2015)	-	identify, select and develop talent (p. 186) academic TM rests on two pillars: stimulating development of intellectual, academic abilities, in particular for the junior positions; and controlling and measuring performance, especially for the more experienced academics. (p. 192)
24.	van Balen et al. (2012)	-	'recruiting the best scholars' (p. 313) attract and to retain the best scholars (p. 327)
25.	van den Brink et al. (2013)	-	recruitment and selection (p. 180) attract and retain top talent (p. 180)
26.	van der Weijden, Teelken, de Boer, & Drost (2016)	-	-

The suggested TM model based on Gagné's DMGT 2.0 framework

Due to the lack of the consensus regarding the meaning of TM, we suggest that a special framework adapting the aforementioned Differentiated Model of Giftedness and Talent (DMGT) 2.0 by Gagné (2010b) should be implied.

Our suggested TM model (Fig. 3) is based on Gagné's process-based approach. We are also on the opinion that under certain circumstances (so-called catalysts) 'gifts' can be developed into 'talents', but our suggested TM model fundamentally differs from Gagné's regarding its focus and exact parts. While Gagné (2010b) focused on talents and their development (in an educational context), our model applies Gagné's process-based approach to TM (in general). Our suggested process-based TM model states that the subjects of TM processes are the so-called talent potentials (identified by their competencies), who can become the members of different talent segments through the process of successful attraction, selection, development, and retention. There are some external and internal catalysts (macro environmental and organizational factors, respectively) that may influence the process of the management of talents. We are on the opinion that this model can serve as a holistic theoretical base for examining the TM process in its entirety.

Figure 3 The suggested process-based TM model



Source: Authors' own edit based on Gagné's (2010b) model

The upcoming four subsections detail our findings regarding each of the major components of the suggested model. The fact that all of the examined articles touches upon at least parts of the model further proves its added value in bringing findings together into a more holistic picture.

1. Talent Potentials

Talent potentials are in the starting point of our process-based TM model, as the subjects of TM activity, who should be identified according to their competencies in line with Spencer and Spencer's (1993) Competency Clusters: "Achievement and Action" competencies, "Helping and Human Service" competencies, "The Impact and Influence" competencies, "Managerial" competencies, "Cognitive" competencies, and "Personal Effectiveness" competencies. (Fig. 3) Depending on the given job, the required high-level competencies should be determined in order to select the employees to be labelled as talent potentials on the given field.

During the systematic literature review on TM in HE we found that several authors (Mohan et al., 2015; Peet et al., 2010; Rutledge et al., 2016) were concerned about competency management and/or certain competencies of talents, but they didn't define talents by their competencies.

Some other authors (Erasmus et al., 2017; Saddozai et al., 2017) were concerned about defining talents according to the talent tensions (inclusive versus developable). Only Thunnissen and Van Arensbergen (2015) focused on conceptualizing academic talents, while Singh and Singh (2015) wrote about a specific measurement (the so-called Teacher's Talent Quotient) in order to define talent of management teachers.

2. Talent Management Processes

In our process-based approach of TM (Fig. 3), we distinguish four TM processes: attraction, selection, development, and retention of talents. Attraction encompasses drawing the potential talented employees' attention to the opened positions and getting them to apply for the given job, that is, recruitment. Selection means finding the best from all the talented applicants. Development provides the necessary training and development for talents – including new hires and those who has already been working there for a while, too. Retention aims to support the employment of talents as long as possible.

The examined articles showed several different viewpoints on TM processes and practices, as is shown in the last column in Tab. 3. There were some articles focusing on certain TM processes, for instance, Paisey and Paisey (2018) on recruitment, van den Brink et al. (2013)

on talent recruitment and selection, O'Bryan and Casey (2017) on hiring and development, Oludayo et al. (2018) on retention, and van der Weijden et al. (2016) on career management. Furthermore, O'Bryan and Casey (2017) and Peet et al. (2010) wrote about the entire TM activity mentioning Talent Lifecycle (consisting of 4 TM processes) and Talent Management Cycle (consisting of 8 TM processes), respectively.

The examined 26 articles significantly differ in their interpretation of TM processes. Barkhuizen, Roodt, and Schutte (2014), Oludayo et al. (2018), and Thunnissen (2016) mentioned only two TM processes; while Barkhuizen, Mogwere, and Schutte (2014), Salau et al. (2018), Thunnissen and Van Arensbergen (2015), and van Balen, et al. (2012) proposed three of them. Most of the articles distinguished four TM processes (Bradley, 2016; Erasmus et al., 2017; Mohan et al., 2015; Peet et al., 2010; Saddozai et al., 2017; Singh & Singh, 2015; van den Brink et al., 2013). Furthermore, some authors mentioned even more (6-9) TM processes (Eghbal et al., 2017; O'Bryan & Casey, 2017; Rastgoo, 2016; Rutledge et al., 2016). (Tab. 3)

3. Talent Segments

In our TM model, we differentiate several segments of talents according to their specific characteristics and varying needs regarding TM processes and practices: managerial/leadership talents, high potentials, critical skill employees, graduate/Gen Z talents, and trainee talents. (Fig. 3)

Managerial/leadership talents refer to managed talent potentials in managerial positions, while high potentials refer to those talent potentials who are expected to fulfill a managerial position in the future. Critical skill employees possess unique skills, capabilities, competencies or knowledge. Graduate/Gen Z talents are trainee talents who are members of the young generations with no/less experience in the given field. High potentials, graduate/Gen Z talents and trainee talents can be labelled as junior talents.

Our review on TM in HE summarized the different conceptualizations and types of talents. Regarding the conceptualization of talent, we found that almost all (25; 96%) of examined articles contained some kind of conceptualization of talent. (Tab. 3)

As shown in Tab. 3, most of the articles mentioned managerial/leadership talents only (Badia, 2015; O'Bryan & Casey, 2017; Palmer et al., 2015; Rayburn et al., 2016), while others contained both managerial talents and high potentials (Barginere et al., 2013; Oppong & Oduro-Asabere, 2018), or managerial talents and intern talents (Peet et al., 2010). Van Balen et al. (2012) focused on high potentials only. In Tab. 3, the last column contains our classification of

the talent segments according to our suggested model, while the original occurrences of the relevant expressions are highlighted in grey in the neighboring column.

Some articles mentioned specifically academic talents, and differentiated them according to two aspects: their main tasks – teaching versus research versus support talents (Bradley, 2016; Salau et al., 2018; Thunnissen, 2016; van der Weijden et al., 2016), and their seniority – senior versus junior talents (Lim & Boey, 2013; Thunnissen, 2016; van den Brink et al., 2013).

Table 3 Summary of talent definitions and segments in examined articles on TM of academics

	Author(s)	Who is talent?	Talent segment(s)
1.	Badia (2015)	Leadership potential	High potentials
2.	Barginere et al. (2013)	High-performing individuals with high potential for future leadership roles (Rothwell) (p. 71)	High potentials, Managerial talents
3.	Barkhuizen, Mogwere, & Schutte (2014)	support staff	
4.	Barkhuizen, Roodt, & Schutte (2014)	skilled and competent academic workforce (p. 2037)	
5.	Bradley (2016)	talent pool (pivotal, high value-added, roles in both teaching and research … these roles may not be explicit leadership roles (Yielder & Codling, 2004) (p. 15))	Teaching and research talents
6.	Eghbal et al. (2017)	inclusive approach (Huselid, Beatty & Becke [Huselid et al., 2010] state that all individuals have certain talents that must be uncovered and identified. (p. 84))	
7.	Erasmus et al. (2017)	inclusive/developable talent philosophy (p. 86): every employee has the potential to contribute towards the organisation's objectives and this capability may be developed (Meyers, Woerkom, & Dries, 2013) various talent pools (p. 89)	
8.	Lim & Boey (2013)	junior and senior talents (p. 120)	Junior and senior talents
9.	Mohan, Muthaly, & Annakis (2015)	-	
10.	O'Bryan & Casey (2017)	Managerial leaders (p. 12) Schiemann defines talent as "the collective knowledge, skills, abilities, experiences, values, habits and behaviors of all labor that is brought to bear on the organization's mission." (p. 2-3)	Managerial talents
11.	Oludayo, Akanbi, Obot, Popoola, & Atayero (2018)	academic staff	
12.	Oppong & Oduro-Asabere (2018)	directorship roles, pool of potential leaders	Managerial talents, High potentials
13.	Paisey & Paisey (2018)	Talent has been defined in a variety of ways, for example whether it is innate or alternatively, whether it can be acquired, with different organisations taking different approaches across the full spectrum (Meyers, van Woerkom, and Dries 2013). Other questions raised are whether talent must be manifest at the recruitment stage or whether instead its potential can be recognised, and whether the focus should be on people themselves or on their characteristics, such as their qualifica- tions (Thunnissen, Boselie, and Fruytier 2013b). Underlying conceptualisations variously view talent as capital, individual difference, giftedness, identity, strength, or the perception of talent (Dries 2013). In terms of implications for organisations, Minbaeva and Collings (2013) argue that it may not be necessary to always recruit the 'best' in terms of experience or qualifications, or 'A players' for example; instead it is important to focus on outputs and to consider how talent can best be deployed within an organisation. (p. 3) talent was being defined in terms of qualifications rather than other attributes (p. 11)	
14.	Palmer, Hoffmann-Longtin, Walvoord, Bogdewic, & Dankoski (2015)	Department chairs	Managerial talents
15.	Peet, Walsh, Sober, & Rawak (2010)	leader/managerial talent, intern talent (p. 72)	Managerial talents, intern talents
16.	Rastgoo (2016)	Studying of entities of human capital of educational system, talents can be discovered, and managing and training of these talents correctly, the efficiency of employees of educational system can be increased. (p. 654)	

Table 3 (continued)

	Author(s)	Who is talent?	Talent segment(s)
17.	Rayburn, Grigsby, & Brubaker (2016)	Department chairs	Managerial talents
18.	Rutledge, LeMire, Hawks, & Mowdood (2016)	inclusive approach (library employees p. 236)	
19.	Saddozai, Hui, Akram, Khan, & Memon (2017)	Most of the studies define talent as a characteristic which depends on individual abilities, environment in which the individual is working, organization and the circumstances within the organization also affect these characteristics.(Thunnissen et al., 2013). (p. 538) we represent talent as abilities, high performance and potential. (p. 538) model of talent by Gagne (2004, 2007, 2011) (p. 539) Talent is basically defined as a qualified or well skilled worker with specialized skills, professional experience and who can benefit a society through creative work contributions (Uzma, 2010). (p. 539) An academic talent may stand out as he is viewed as a person with high qualification and is considered as an expert in his field and has capabilities that a very few person can achieve, i.e. scientific approach and academic know how. (p. 546) Besides all these abilities most of the respondents also defined talent as a person with interpersonal characteristics like motivation, have strong commitment towards their goal and who are prepared to go extra mile to get the work done… (p. 546) Talent categories: Talent=Abilites, Talent=All employees, Talent=Educated employees, Talent=Performance, Talent=Interpersonal characteristics, Talent=Key personnel, Talent=Ready-made talent, Talent= High potential, Talent=Gifted person (p. 547)	
20.	Salau et al. (2018)	staff (teaching and non-teaching) (p. 1041) employees working there for min 2 years (p. 1042)	Teaching and non-teaching talents
21.	Singh & Singh (2015)	talent has been defined as the sum of a person's abilities – their skills, knowledge, experience, intelligence, judgment, attitude, character, and drive (Michaels et al., 2001) (p. 752)	
22.	Thunnissen (2016)	Within their TM definitions authors adopt different terms for "talent," for example "excellent abilities," but also terms like "key employees", "high potentials" or "those individuals with high potential who are of particular value to an organization" are used. The variety of terms used to define talent reflects one of the most central debates in TM, i.e. whether TM is an inclusive approach which focusses on (the talents of) all employees, or an exclusive approach aimed at attracting and retaining a select group of employees (Tansley, 2011). (p. 58-59) talents are recruited and developed with a broad variety of TM practices to direct their behavior in a direction that fits the organizational needs, and, as a result, the individual is happy and motivated, and individual and organizational performance increases (p. 59) talent: a scientist with extraordinary insights, a great mind who realized critical breakthroughs in his or her academic field (p. 62) Senior and junior academic talents, postdoc researchers and lecturers (p. 66)	Senior and junior academic talents, postdoc researchers and lecturers
23.	Thunnissen & Van Arensbergen (2015)	Generally, in the debate on operationalizing talent five dimensions (or "tensions" as Dries, 2013 calls them) become manifest: subject/object, inclusive/exclusive, innate&stable/acquired&developable, input (abilites, motivation)/output (excellent performance, success), transferable/context-dependent (p. 182-183) DMGT by Gagne (p. 184) Ulrich and Ulrich (2010) argue, talent =competence ×commitment × contribution (p. 185) Talent is a bundle of interrelated components of outstanding abilities, interpersonal characteristics and excellent performance. (p. 195)	
24.	van Balen et al. (2012)	high potentials (p. 314) talent is often defined as a natural ability or capacity, in an academic context it generally refers to the academic quality of someone's past achievements (Thunnissen et al., 2010; Van Arensbergen and Van den Besselaar, 2012), (p. 318) …criteria for talent relate to research performance, teaching skills and motivation. (p. 318) …in the US, where tenure depends on explicitly formulated criteria with respect to quality and quantity of research output (p. 318)	High potentials
25.	van den Brink et al. (2013)	senior academic talent: full professors; junior academic talent: PhD students, postdocs and assistant professors (p. 184) It was found that performance indicators such as the H-index and citation indices were widely used in most academic fields, although predominantly for the initial selection between applicants. In the next phase, where seemingly equal applicants were evaluated, the selection process became less transparent and objective. (p. 192)	Senior academic talents, junior academic talents
26.	van der Weijden, Teelken, de Boer, & Drost (2016)	''Postdoctoral researchers (postdocs) are newly qualified researchers with a Ph.D. and/or MD backgrounds, working autonomously in research at universities or related institutions but without a tenured contract'' (Stanford et al. 2009, p. 3). (p. 29)	Postdoctoral researchers

4. Macro Environmental Factors and Organizational Factors

Our suggested process-based model of TM contains some important macro environmental and organizational factors affecting TM (Fig. 3):

- globalization, technological development, and demographic trends;
- the strategy, role of HRM and HRM strategy, organizational structure and culture, leadership attitude, main area(s) of activities, location(s) and HQ country, and career opportunities, respectively.

As the result of our systematic literature review on TM in HE, we found that TM is connected to and dependent on its context. Such external factors as job demands and job resources (Barkhuizen, Roodt, et al., 2014), external labor market (Thunnissen, 2016), and labor market fluctuation (van Balen et al., 2012) were highlighted in the examined articles.

Some authors were concerned about certain internal factors, such as the organizational strategy (Bradley, 2016), the operation of the organization (Mohan et al., 2015; Salau et al., 2018; Thunnissen, 2016), main areas of activities (Thunnissen, 2016; Thunnissen & Van Arensbergen, 2015), and special organizational factors (van Balen et al., 2012; van der Weijden et al., 2016).

CONCLUSION, LIMITATIONS AND FUTURE RESEARCH QUESTIONS

The purpose of this study was to present the results of a comprehensive systematic literature review on TM of academics, while the following RQs were the starting points of our analysis. RQ1: What can be observed regarding TM and TM processes in HE (based on the literature available in Web of Science (WoS) and Scopus)?; RQ2: Are there any special characteristics of TM of academics?; RQ3: What are the most common TM processes and/or practices in academic institutions?

Regarding RQ1, we observed discrepancies between the approaches of the examined articles to TM and TM processes in HE. The main problem was the conceptualization of TM in itself in the examined literature. We found that only approximately half of the examined articles (54%) contained some kind of definition of TM, while 46% of them did not define TM. At the same time, all the well-known TM approaches were present in the articles. Most of the articles (77%) mentioned TM processes at least, but 23% of them did not. There were several opinions about the interpretation of the entire TM activity consisting of a different number of TM processes. Some authors focused only on the main branches of TM (acquisition and retention), while others were concerned about more sophisticated TM processes.

Regarding RQ2, we found some special issues and characteristics of TM of academics. A substantial issue we encountered during this research was regarding the operationalization of

the staff of HE institutions and/or 'academics' at all. There was no consensus in the examined articles on the subjects of TM. Some sources (e.g., van Balen et al., 2012; van den Brink et al., 2013) referred to teaching and research staff as academics and academic talents, some (e.g., Barginere et al., 2013; Oppong & Oduro-Asabere, 2018) included university support staff as well, while others (e.g., Erasmus et al., 2017; O'Bryan & Casey, 2017) did not really specify what they mean when they spoke about for instance "all university staff" (Lim & Boey, 2013) or "faculty members" (Eghbal et al., 2017) as the employees participating in TM. We presented the theoretical possibilities (Fig. 1): either all or some of those who perform teaching, research, and support tasks (e.g., librarians) could be taken as academics at a given HE institution. Such operationalizations depend on how given researchers see such matters as well on the specificities of the institutional system of HE, which may vary from country to country.

Therefore, we suggest conducting (e.g., region- and sub-field-specific) empirical investigations to analyze the characteristics of the Hungarian HE system and filling the gap about TM of academics in Hungary as available scientific information on the topic is really scarce. For doing this, we suggest following a holistic approach, keeping the complexity of the entire TM activity in mind and relying on our suggested model (Fig. 3) for examining the charachteristics of each of its main components. Regional differences, variant characteristics of the subfields (disciplines) or specialties of the academic field (e.g., teaching versus support) may also occur, which need further empirical examination. Several internal or external catalysts might affect the entire TM activity as well: a special element could be the development of an HRM department and/or systematic and planned HRM practices of HE institutions, the practice and possibility of which is also underexamined in the Hungarian HE system. It would also be beneficial to investigate TM in HE from the perspective of students and other stakeholders, not to concentrate on employees only.

Regarding RQ3, we aimed to collect the most common TM processes and practices at academic institutions, however, we found that in the examined articles there were huge differences regarding TM operationalizations. Overall, it can be said that the process approach of TM in HE is not (really) present in the literature and there is also a lack of a holistic thinking about TM in HE. Many studies examined only parts of the whole process and many authors focused only on a (narrow) part of the entire TM activity without even mentioning the importance of the other parts and the need for them to be integrated with one another.

As shown in Tab. 3, most of the articles distinguished four TM processes and most of them mention at least some of the four TM processes that are present in our suggested process-based model, namely attraction, selection, development, and retention of talents.

One of the limitations of our work is that its input data is from two major databases WoS and Scopus. The extension of these data sources and the inclusion of further relevant

publications would give further value to the findings of this work. Please also note that the lack of relevant publications on the Hungarian HE system is the reason why such publications were not included in the analysis.

Based on our systematic literature review, several potential future reseach questions came up, especially regarding the TM of academics in Hungary. For instance, the followings: What kind of TM approach can be observed in Hungarian HE institutions? How can the need for excellent staff (in the right number and required quality) be covered in academic institutions in Hungary? Are there any Hungarian HE institutions with HRM departments? If yes, how do they carry out TM activities? Are there any differentiations in TM in Hungarian HE according to the academic fields (e.g., teching versus support)? Which academic fields are in the focus of TM in the Hungarian HE system? Are there any common practices of TM of academics in Hungarian HE? Do Hungarian HE institutions segment their (potential) talents (e.g., PhD candidates versus managarial talents)? If so, do TM practices differ from segment to segment? Are there any differences according to the disciplines (e.g., so-called STEM fields versus humanities) under the current economic conditions involving a huge need for talents in several jobs? How can Hungarian academic institutions acquire and retain their talents in order to achieve the organizational goals?

SUMMARY

Talent management (TM) has become a key management issue recently. Several studies found that finding and keeping talented people is the "single most important managerial preoccupation for this decade" (Thunnissen et al., 2013, p. 1744)—and nowadays this is also true for institutions of higher education (HE). However, no study summarizes already existing knowledge regarding TM of academics, while TM literature is frequently criticized for lacking sound theoretical bases. Hence, the purpose of this study was to present the results of a comprehensive systematic literature review on TM of academics, answering three research questions: What can be observed regarding TM and TM processes in HE (based on the literature available in Web of Science (WoS) and Scopus)?; Are there any special characteristics of TM of academics?; What are the most common TM processes and practices at academic institutions?

With the aim of conducting a comprehensive review, we searched for publications in the complete Web of Science (WoS) and Scopus databases with the search string: "talent management" AND (adacemi* OR "higher education" OR universit*) with no restrictive conditions on the date of publication. Non-English and non-article items were excluded, which resulted in 68 (WoS) + 108 (Scopus) items; data collection was closed on September 30, 2018. Due to the overlapping of the two databases, eventually 124 articles remained for review. Out of which only 26 articles were found actually relevant for analysis based on their contents and the often cited definition of TM by Collings and Mellahi's (2009).

In the examined articles we observed different operationalizations of 'academics'. Some authors referred to teaching and research staff as academics, some included university support staff as well, while others did not really specify what they mean when they speak about, for instance, "all university staff" or "faculty members". We summarized the theoretical possibilities: either all or some of those who perform teaching, research, and support tasks (e.g., librarians) could be taken as academics at a given HE institution. Such operationalizations depend on how given researchers see such matters as well on the specificities of the institutional system of HE, which may vary from country to country. In line with the variedness of the operationalization of the concept of academics, the areas of study of the examined articles were also diversified ranging from academia through academic libraries and HE to academic medical schools.

We found that in only 21 out of the 26 publications was TM a central topic, while in a few articles (5) TM was only marginally covered. These 5 articles were concerned primarily on such topics as leadership, succession planning, university management, and competency management. Most of the of the examined

articles (23) contained empirical analyses covering various regions of the world from China, through Ghana to the Netherlands and the US.

One of the main problems we encountered was the conceptualization of TM in the examined literature. We found that only approximately half of the examined articles (14) contained some kind of definition of TM, but all the four well-known TM approaches were present; and most of the articles (20) mentioned at least TM processes. There were several opinions about the interpretation of the entire TM activity consisting of a different number of TM processes. Some authors focused only on the main branches of TM (acquisition and retention), while others were concerned about more sophisticated TM processes.

Due to the lack of the consensus regarding the meaning of TM and the TM processes, we suggested a new, special, process-based framework. Hence, in addition to descriptive statistical analyses, we also reviewed the selected articles following our suggested a new, holistic, process-based TM model that could be a foundation of creating future TM programs in academia or any other field. The model consists of four main elements following the logic of Gagné's (1995, 2004, 2009a, 2009b, 2010a, 2010b) DMGT 2.0 model: (1) Talent potentials, who will form the (2) Talent Segments as the result of the processes of (3) Talent management, while certain external and internal (4) Catalysts may influence the process.

During the systematic literature review on TM in HE we found that several authors were concerned about competency management and/or certain competencies of talents, but they didn't define talents by their competencies. We suggested implying Spencer and Spencer's competency cluster and that the required high-level competencies should be determined in order to select the employees to be labelled as talent potentials on the given field.

The examined literature significantly differed in their interpretation of TM processes, but most of the articles distinguished four TM processes and most of them mention at least some of the four TM processes that are present in our suggested, process-based model, namely attraction, selection, development, and retention of talents.

There were discrepancies regarding the conceptualization of talent, as well. We found that almost all (25) of examined articles contained some kind of conceptualization of talent, but they differed in their approaches to talents and types of talents. Some articles mentioned specifically academic talents, and differentiated them according to two aspects: their main tasks – teaching versus research versus support talents, and their seniority – senior versus junior talents. Regarding talent segments, most of the articles mentioned managerial/leadership talents only, while others also contained high potentials or intern talents. In our new, process-based TM model, we differentiated five segments of talents according to their specific characteristics and varying needs regarding TM processes and practices: managerial/leadership talents, high potentials, critical skill employees, graduate/Gen Z talents, and trainee talents.

The examined articles presented that TM is connected to and dependent on its context, for example, job demands and job resources, or labor market fluctuation were mentioned as important external factors. Besides, some authors were concerned about certain internal factors, such as the organizational strategy, the operation of the organization, main areas of activities, or other special organizational factors as well. In our process-based model of TM, we highlighted, on the one hand, globalization, technological development, and demographic trends as macro environmental factors; on the other hand, the strategy, role of HRM and HRM strategy, organizational structure and culture, leadership attitude, main area(s) of activities, location(s) and HQ country, and career opportunities as organizational factors, which might affect the entire TM activity.

The article contributes to the theoretical advancement of the field strengthening the theoretical bases of the field and of future empirical research works through the model we developed for TM in HE, while it also highlights the need for further (e.g., region- or sub-field-specific) empirical investigations.

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ROMA POPULATION IN HUNGARY – SPATIAL DISTRIBUTION AND ITS TEMPORAL CHANGES

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Abstract

The objective of the current analysis is to discover the territorial characteristics of the Hungarian Roma population and its changes during the last almost three decades. The basis of the investigation is provided by the census datasets from 1990 and 2011 – as auto-identification – and two surveys (the so-called CIKOBI survey from 1984–1987 and the survey of the University of Debrecen from 2010-2013), ensuring the external ethnic identification. The last census gave 315,000 Roma and the recent survey resulted in approximately 876,000 Roma people in Hungary.
The significant growth of the Roma population is obviously demonstrated and its regional disparities are also discovered. The most important regional characteristics came to light with weakening territorial backwardness by the ratio of Roma population living in towns is coming to the national value. However, the rapid growth of the Roma population is especially visible in the case of the districts with high ratio of Roma already during the 1980s (high values approximately doubled as well). This process is quite concentrated mostly in districts in the traditional backward areas of the country.

Keywords: demographic processes, ethnic categorization, ethnic decomposition, census, Roma population

INTRODUCTION

Although numerous surveys have studied the number of Roma people and the social demographic characteristics of the Roma population since the 1970s only a few were aimed to study the Roma[14] population in detail (at settlement level). The last comprehensive survey (with many critics) was carried out by the Geographical Research Institute of the Hungarian Academy of Sciences with the help of the Roma Coordination Committees (CIKOBI – as it is referred in the current paper) between 1984 and 1987. No settlement-level survey of the population believed to be Roma has been performed in the 30 years since the above survey even though fundamental changes appeared in Hungary regarding both the number of Gypsy people and the social-economic conditions of the country (including increasing mobility and its new form, suburbanization). Based on this, it can be presumed that the geographical distribution of the

[14]The terms Roma and Gypsy are used as synonims in this publication similarly to other publications.

Roma population also changed considerably. Such processes could be traced partly in census data which can be related to the Roma population of Hungary in a limited way only.

The primary aim of our paper is to study the regional distribution of the Roma population related to settlements and also to study the changes of the spatial distribution of the Roma population over the last 30 years. Results are presented not only on their own but also in comparison with the data of previous surveys (primarily that of CIKOBI) and to that of the last census.

The external (expert) categorization method was applied in our research for which we have to define who is regarded Gypsy. Agreeing with János Ladányi and Iván Szelényi (1997) and also with the constructivist interpretation of Gypsies (e.g. Brubaker, 2001, Feischmidt, 2010) we do not think that the Roma population or any other ethnic groups would have an accurate number meeting all criteria that could be determined objectively. As a result, the aim cannot be to give a real number to the Roma population. It can be seen, however, that identifying someone as Gypsy is subjective and context dependent. Also the boundaries of Roma people as a category are very rigid, social exclusion is strong therefore we consider it important to know how many people believed to be Gypsy live in Hungary nowadays and this will be presented in the paper.

The application of the results of territorial studies has multiple aims: the relationship between social/ethnic marginalisation and geographical peripherization can be presented as had been done earlier in the case of Northeastern Hungary (Pásztor & Pénzes, 2012). Results may also contribute to the study of the population of poor settlements with advancing ghettos (Ladányi & Virág, 2009, Váradi & Virág, 2015, Bálint, 2018). Gábor Fleck and Vera Messing (2010) calls attention to the fact that it is essential to know who are Gypsies, where they live when targeted labour market support is issued and answers may support public politics as well. Results may also supply useful information to establish future research (even representative) and also to select research sites: could identify settlements where carrying out further research would be justified following comparison with censuses and other classification systems.

THEORETICAL BACKGROUND

Methodology and results of research aimed at estimating the Roma population – a review

The determination of the number of Gypsies became a focus of social and scientific interest already from the second half of the 19th century and especially in the last half a century. The reason for this is that the number of those declaring themselves Gypsy at censuses is far from

the number of those believed to be Gypsy by their environment. The former is generally 30-40% of the latter (Kemény & Janky, 2003).[15] The number of those identifying themselves Gypsy varies hectically from census to census and this results in a distrust regarding the related census data. The variation of census data (people identifying themselves with Gypsy language and ethnic categories – called as auto-identification) is influenced greatly by the fact that the majority of Roma people are heterogeneous with Hungarian being their first language (Szuhay, 1997, Durst, 2010, Orsós, 2015). The methodology and organization of the census could also be decisive especially the possibility of indicating multiple ethnic bonds which is possible since 2001 in Hungary. Most research projects also emphasize that the auto- identification of Roma people is influenced by the social conditions of the given time, the strength of discrimination, stigmatization and racist common talk (Fosztó, 1997, Csepeli & Simon, 2004, Szuhay, 2007, Ladányi & Virág, 2009, Durst, 2010, Tátrai, Pálóczi, Pásztor, & Pénzes, 2017).

The above variability, uncertainty and the special social situation of the Roma population brought about such Roma research that were aimed at surveying the number and social-demographic (possibly spatial) conditions of the Roma population (surveys based on non-Roma expert and interviewer assessments called as hetero-identification). However, the results – that are considered to be much more reliable than auto-identification – are rather variable containing estimations significantly differing from each other regarding the number of Roma people. Censuses reveal not "wrong" data but important social facts (Ladányi & Szelényi, 2004). Differences can be explained not necessarily by "measurement error" but differing methodological background and also by the subjectivity in the definition of Roma people.

Different methodologies could yield significant differences in the case of hetero-identification, especially the accurate identification of the research subject (who is considered Roma by the assessor) and the interests and targets behind the number/ratio of Roma people could be very important. Such interests include majority and minority racism the interest of which is to overestimate the number of Gypsies (Ladányi & Szelényi, 1997)[16] and occasionally strong settlement, institutional and political interests may be associated with the results provided by external assessors (Tátrai et al., 2017).

Considering methodology, one part of Roma research (the majority) apply the external categories defined by the experts including the Gypsy registration in 1893 (OMKSH, 1895),

[15]Ahmed et al. (2007) estimate this ratio to 38% in their study while Ladányi and Szelényi (2004) estimate this to one third.

[16] Accordingly, both the majority and the Roma people overestimate the number of the Roma population in Hungary (Marketing Centrum, 2009).

the sociological surveys lead by István Kemény (Kemény, 1974, Kemény, 1997, Kemény, Janky, & Lengyel, 2004), the CIKOBI surveys in the 1980s (Kocsis & Kovács, 1991, Kertesi & Kézdi, 1998), data survey of the Hungarian Central Statistical Office (HCSO) in 1993 (Mészáros et al., 1994) or the research of the National Institute for Family and Social Policy in 2010 (Koltai et al., 2011). According to the definition of the above surveys, those are considered to be Gypsies who are regarded Gypsies by their non-Gypsy neighbours based on various criteria (lifestyle, way of life, anthropological characters) and experience from living together (Kemény, 1974; Havas, Kemény, & Kertesi, 2000; Kemény et al., 2004). This approach – although received criticism (Ladányi & Szelényi, 1997, 1998, Keményfi, 2002) – is a method that can be applied simply regarding field research and questionnairing in practice and with accurate setting of research objectives and careful sampling could be used well (Havas et al., 2000). Another part of Roma research is either based on external categories applied by the interviewers or combines expert and interviewer variants (Ladányi & Szelényi, 2004).

Most of the mentioned studies dealt with the spatial distribution of Gypsies to some extent. Detailed – covering the entire population and at settlement level – regional characteristics can be detected only in the Gypsy registration in 1893 and the so-called CIKOBI survey carried out between 1984 and 1987 (Kocsis & Kovács, 1991).[17] The rest of the surveys (the most well-known, for example, were led by István Kemény in 1971, 1993 and 2003 (Kemény, 1974, Kemény, 1997, Kemény, et al. 2004) were representative at county level at the most – as a result of their methodology – and total spatial coverage was not a target. Furthermore, the survey organized by HCSO in 1993 worth mentioning that provided data on the Roma population relevant at national level that cannot be more detailed spatially (Mészáros et al., 1994).

Since 1987 no detailed data regarding the regional distribution of the Roma population have been published thus colleagues of the Department of Social Geography and Regional Development Planning, University of Debrecen (UD) performed their survey dated to 2010–

[17] Data of the CIKOBI survey were published by Kertesi–Kézdi (1998). This database has been modified by the authors of the present paper in several aspects using the original data found in the manuscript (these data were published by for example Pécsi, 1989, Kocsis–Kovács, 1991). Studying the CIKOBI database several critical notices can be made that harmonize with distortions caused by the subjective nature of responses and therefore they are parallel to the observations discussed on the example of the survey of the University of Debrecen (UD) in 2010–2013. At the same time, the example of Tiszavasvári (Kemény et al., 2004, page 158) pointed out that there was a significant difference between the willingness and attitude of the respondents. In several cases zero Roma people were found in the CIKOBI survey in areas where the presence of a Roma community could be seen clearly in the census of 1990. The survey of the UD in 2010–2013 showed that local governments who wished not to respond sent us to the minority (later ethnic) local governments (this was not possible before the Socialist regime change).

2013 (that have many things in parallel with the CIKOBI survey in 1984–1987) that was one of the bases of the present study. The survey was carried out by interviewing the local governments of the settlements – partly necessarily Roma ethnic local governments – i.e. it was based on hetero-identification (Pénzes et al., 2015a, 2017, 2018). The Slovakian Roma Atlas[18] was made with a similar approach. The essence of the method is that local government workers (mayor, notary, social expert) being in contact with locals on a daily basis have comprehensive information on local conditions including the number/ratio of Roma people at the settlement. In practice, this was performed so that local governments occasionally handed over the issue to the ethnic local government therefore there were Roma and non-Roma data providers as well.

The issue of who is Gypsy was approached from practice point of view by the survey of the UD in 2010–2013 using the modified version of the definition of Kemény. Those are Gypsies who are regarded Gypsy by their neighbourhood (Roma or non-Roma) on the basis of certain criteria (way of life, lifestyle and anthropological characteristics) and experience of living together. Data providers included Roma (e.g. leaders of Roma ethnic local governments or Roma mayors) and non-Roma people as well and opposite to certain experience (Keményfi, 2002) involving Roma data suppliers in the research worked well in this case.

It is important to emphasize that the research focused on Roma people but the starting point was not the Roma population but spatiality. This meant that the issue was approached not on the basis of a representative sample but from the regional level in the survey. The survey was not able to and was not aimed at studying the internal structure and social situation, conditions of Gypsies but it provided fresh information regarding the number and spatial distribution of Roma people. The approach was at the macro level considering not the individual assessment of classification systems but the overall result. This method (despite its rightful critics) drew an increasing attention in several Central European countries [e.g. Slovakia (Mušinka et al., 2014), Croatia (UNDP, 2015), Romania (SocioRoMap, 2017)] therefore its application was regarded to be justified. The survey was not aimed at identifying the basis of the categorization of the different surveys as this would not be possible anyway due to the high number of data providers.

[18] The survey of the Roma Atlas in Slovakia targeted local governments using a very complex questionnaire that surveyed both the conditions of the Roma population and that of the settlements (Mušinka, Škobla, Hurrle, Matlovičová, & Kling, 2014). The Slovakian Roma Atlas published in 2013 had its history as a similar survey had been concluded already in 2004 (Matlovičová, Matlovič, Mušinka, & Židova, 2012). The study of the University of Debrecen and the Partium Christian University (UD–PCU) focusing on the settlements of two counties (Hajdú-Bihar and Szabolcs-Szatmár-Bereg) adapted the Slovakian methodology and questionnaire in 2016 (Szilágyi–Pénzes, 2016).

Despite this some conditions of the mechanism of hetero-identification could be identified based on the survey, as three phenomena influencing the classification could be observed rather well.

Firstly, uncertain cases (primarily mixed marriages and partnerships and children born in them) are generally recognized as Gypsy by the non-Roma population similarly to the "one drop of blood" view in the United States in relation to white and black people. Many exceptions have been published in Hungarian literature (Ladányi & Szelényi, 2004, Virág, 2016).

Secondly, some local leaders assessed poor people Gypsy (independent of ethnicity) and made no differentiation to the two terms (Velkey, 2014). This is practically the phenomenon of poverty ethnicism (Váradi, 2007).

Thirdly, it is an important experience that – in harmony with the results of the CIKOBI survey and with those of previous research (Ladányi & Szelényi, 2004, Virág, 2010) – the smaller is a settlement the surer and more exact the hetero-identification will be as people know each other better. Estimating the number of Roma people is less certain in greater settlements and in many cases only intervals were given.

The above type of methodology can be regarded suitable for spatial studies as well despite the distortions occurring in the queries (for more detail see Pénzes et al., 2015a, 2017). This assumption is supported by the fact that the already mentioned UD-PCU survey focusing on the settlements of two counties in 2016 yielded exactly the same results as the summary of the UD survey in 2010–2013 in the case of appropriate settlements (moreover, local government and Roma ethnic local government responses gave almost the same number for the Roma population as well) (Szilágyi & Pénzes, 2016). The authors tried in several publications to compare the methods applied for studying the number of Roma people (Pénzes et al., 2015a, 2017, Tátrai et al., 2017).

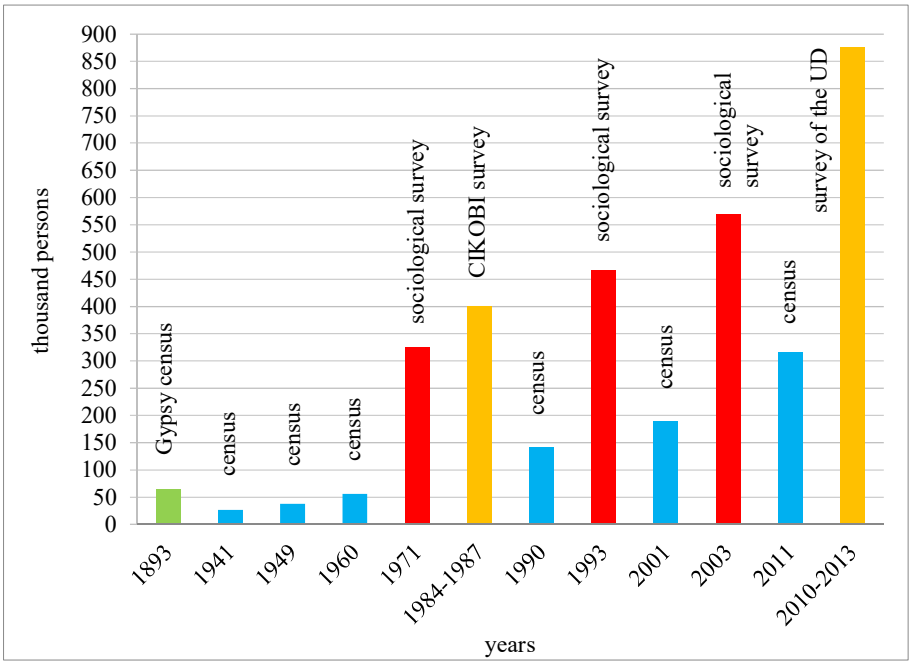
RESULTS

Number of Roma population in Hungary – different approaches and altering results

Earlier researches – using different methods in part and even the surveys carried out in more or less the same time period differed from each other significantly regarding numbers – supported the same tendency: based on data with similar methodological background the number and ratio of people believed to be Gypsy increased gradually in Hungary (Fig. 1). The increase was

significant from 65 thousand people in 1893 (OMKSH, 1895) to 570 thousand people by the representative survey in 2003 (Kemény et al., 2004).

Figure 1 Estimated number of the Roma population in Hungary between 1893 and 2013, in thousands (similar methodologies are indicated by same colors)

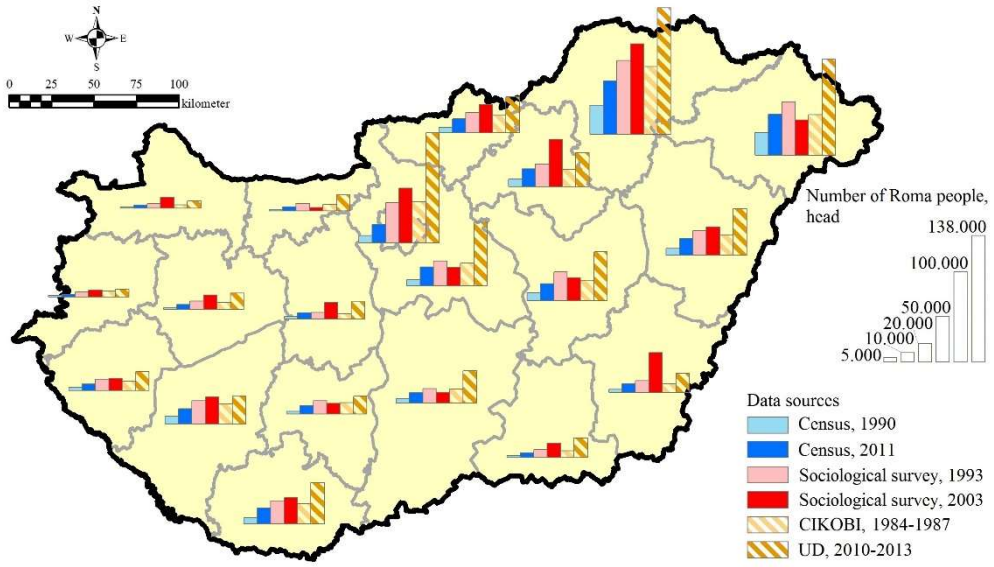


Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Cserti Csapó (2008), Hablicsek (2008), Pénzes and Pásztor (2014)

On the basis of the data of sociological surveys, László Hablicsek performed a prediction on the number of Roma people in a regional breakdown and determined the number of Roma people to be – rounded – 658 thousand people by 2011 and 733–814 thousand people by 2021 (Hablicsek, 2007). This is also supported by the result of the TÁRKI Household Monitoring study in 2012 that estimated the number of the Roma population to 620–680 thousand people (Bernát, 2014). The survey of the UD in 2010–2013 estimated the number of Roma people to 867 thousand people (Pénzes & Pásztor, 2014) while the census in 2011 – according to the data of auto-identification – published a Roma population of 316 thousand people.

The database of Figure 2 based on three different methods shows county level comparison summarising the results of the two latest national sociological surveys, the censuses in 1990 and 2011, the CIKOBI and UD surveys.

Figure 2 Distribution of the Roma population among the Hungarian counties and Budapest by different databases, in thousands



Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Kemény et al. (2004), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

Table 1 Distribution of the Roma population among the Hungarian NUTS 2 regions (the value of Budapest is in brackets) by different databases, in thousands

NUTS-2 regions	Census, 1990	Census, 2011	Kemény and Kertesi, 1993	Kemény and Janky, 2003	CIKOBI, 1984–1987	UD, 2010–2013
Southern Great Plain	7.2	8.2	7.9	12.4	7.9	8.9
Southern Transdanubia	12.7	13.8	14.0	12.4	14.2	11.0
Northern Great Plain	29.1	26.1	25.1	16.8	22.3	23.6
Northern Hungary	32.2	29.6	27.6	32.1	28.0	24.4
Central Transdanubia	4.1	5.1	5.2	6.5	5.2	6.1
Central Hungary (BP)	10.4 (5.7)	13.0 (6.4)	15.3 (9.4)	14.1 (10.5)	17.4 (11.2)	21.8 (13.8)
Western Transdanubia	4.2	4.3	4.9	5.7	5.0	4.2
Hungary in Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011, and the total population of 1985 and 2012.
*Without the data of Somogy county.

Differences between the databases can be observed despite the fact that no significant difference can be detected in the regional distribution of the Roma population (Tab. 1) (mostly the survey of Kemény and Janky in 2003 differs from the others).[19]

[19] The methodology of the sociological survey in 2003 could provide only 1% representativity and uncertainty was increased by the lack of the formerly used school statistics resulting in a survey less accurate compared to previous ones (Kemény et al. 2004, page 11). In Figure 2 the values of Békés and Heves are especially striking together with the low value of Szabolcs-Szatmár-Bereg county compared to the other data charts and the values of the sociological survey of Kemény-Kertesi in 1993. The latter was completed by correctional further calculations published by László Hablicsek (2007, page 28). Of course, the results of the sociological survey are not debated, only the comparision of the detailed county data are considered to be limited (partly taking into account the earlier results of István Kemény and colleagues).

Apart from national research numerous studies were also performed that focused on one or two settlements primarily in the time period after the Socialist regime change. Most of these studied regions with higher ratio of Roma (Cserehát, Ormánság, Szatmár) supplying detailed data with full regional coverage (Baranyi et al., 2003, Filepné, 2005, Kovács, 2001, Virág, 2006, Fónai & Vitál, 2008, Tátrai, 2010, Radics et al., 2013, Süli-Zakar, Pálóczi, & Szabó, 2013, Demeter & Bagdi, 2016, Siptár et al., 2016). Unfortunately, these are not enough to compose the conditions of the settlements of continuous regions (or counties) but valuable data can be obtained about certain settlements including segregation and ghetto forming processes.

Based on the surveyed databases, – in the opinion of the authors – no single, objective and scientific definition exists regarding the Roma population or those who are believed to be Roma in Hungary. Therefore, subjective databases can be used that are based on estimations. The databases providing the basis for the rest of this paper were selected because they enable detailed regional and dynamical studies.

Spatial-settlement conditions of the Roma population

In the following two-two databases are analysed the data of which can be broken down to settlement level and on the basis of which the regional conditions and changes in the spatial distribution of Gypsies could be studied. Despite the significant differences that were revealed between the databases that were based on auto-identification and hetero-identification (censuses belong to the former and the CIKOBI and UD surveys belong to the latter), the most important tendencies can be seen and the reasons for the differences will be discussed below as well. For comparability the settlement structure of 2015 was used in the calculations made applying the available data[20]. CIKOBI data of 1984–1987 were compared to the population of 1985 while data related to Gypsies in the UD survey of 2010–2013 were compared to the population of 2012.

Specifics of settlement hierarchy and structure in the spatial distribution of the Roma population

One specifics of the spatial distribution of the Roma population is a higher concentration at small settlements, villages (Havas, 1999) and rural areas (Tagai, Bernard, Šimon, & Koós,

[20] Regarding the CIKOBI survey, data are available only in aggregated form for settlements with joint councils in Somogy county therefore the data of the county were removed – to avoid distortions – in the course of settlement level calculations.

2018) that also means a significant spatial disadvantage (Kertesi, 2005, Nemes Nagy & Németh, 2005).

Table 2 Distribution of the Roma and the total population among the administrative categories of the settlements in Hungary*, %

Administrative category of settlements	Roma population census in 1990	Total population 1990	Roma population census in 2011	Total population 2011	CIKOBI 1984–1987	Total population 1985 (1st Jan.)	UD 2010–2013	Total population 2012 (1st Jan.)
Village, major village	51.2	27.6	50.4	29.0	41.5	27.4	37.8	29.1
Town	34.0	31.8	33.2	32.7	33.8	31.9	32.7	32.7
County centre, town with county rights	8.7	20.5	9.6	20.4	12.8	20.5	15.1	20.1
Budapest	6.1	20.1	6.8	18.0	11.9	20.2	14.3	18.1
Hungary in total	100.0	100.0	100.0	100.1	100.0	100.0	99.9	100.0

*Without data of Somogy county.

Source: Own construction based on own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011, and the total population of 1985 and 2012

Based on the CIKOBI data, 41% of the Roma population lived in villages and major villages (as mentioned before in the settlement structure of 2015) but by the time of the UD survey its ratio decreased to 38% (Tab. 2). Regarding the entire population of Hungary, the ratio of those living in villages and major villages slightly increased in the last almost three decades but remained below 30% according to the data of 2012. It is worth noting that the increasing ratio of the population of the above settlement categories – regarding the entire population – is caused primarily by the increase of the population of such settlements in the Budapest agglomeration and the suburbs of county centres (Bajmócy, 2014), while settlements located in rural areas, especially in underdeveloped regions are characterised by dynamic population decrease (Pénzes et al., 2015b). The decrease of the ratio of the Roma population is again small between the censuses in 1990 and 2011 but the 50% share of villages and major villages compared to the previous databases is even more striking.

The ratio of the Roma population decreased only slightly in the case of towns as well considering databases based on both auto- and hetero-identification. At the same time, the share of both Budapest and the cities with county rights of the Roma population increased. The rate of increase of the greatest cities and Budapest exceeded 2 percentage points based on the data

of the CIKOBI and UD surveys, while it remained below 1 percentage point based on the data of the census. The total ratio of Gypsies within the settlement groups shows a shift towards towns (primarily towards county centres and Budapest). It is important to emphasize that the absolute number of Roma people increased up to at least double the former number in all categories (in the case of both databases).

Table 3 The ratio of Roma population within the total population in the administrative categories of the settlements in Hungary*, %

Administrative category of settlements	Census, 1990	Census, 2011	CIKOBI, 1984–1987	UD, 2010–2013
Village, major village	2.48	5.40	5.56	11.47
Town	1.43	3.16	3.90	8.82
County centre, town with county rights	0.57	1.45	2.29	6.65
Budapest	0.40	1.17	2.17	6.96
Hungary in total	1.34	3.10	3.68	8.82

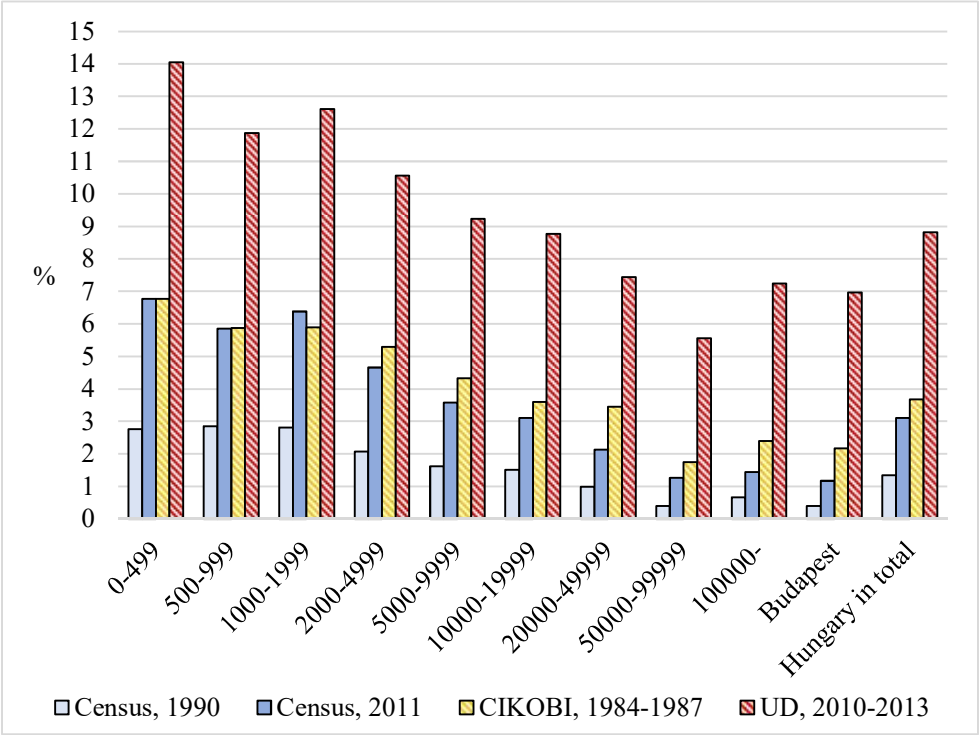
*Without data of Somogy county.

Source: Own construction based on own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011, and the total population of 1985 and 2012

The difference of population changes among the administrative categories of settlements and the dynamic increase of the Roma population resulted in that the ratio of Gypsies increased significantly at the lower levels of settlements (Tab. 3). In the case of villages and major villages, values are higher than the national average for the CIKOBI, UD and the census data as well.

Based on the results, the distribution of the Roma population among the administrative categories of settlements came closer to that of the total population in the last decades, however, differences are still present, proving the higher ratio of Roma in villages. The ratio of Roma people was highest in villages and major villages, 11% based on the UD survey. Census data show that the higher is the settlement hierarchy level the smaller the increase of the ratio of Roma people – measured in percentage points – will be. However, comparing the CIKOBI and UD data this relationship is not so clear. The reason of the difference between the two types of database – in our opinion – could be found in the possibility of the distortion of estimated data depending on settlement size.

Figure 3 The ratio of Roma population in the group of settlements categorised by the number of population in Hungary calculated from different databases, %



Source: own construction based on Kocsis and Kovács (1991), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

Further spatial disadvantage of the Roma population is indicated by that their ratio, based on all databases, is highest in settlements with a total population smaller than 2000 people. Furthermore, their ratio within the total population increased at highest rate in these types of settlements (settlement categories were formed based on the population number of the given year) (Fig. 3). This process is shaped primarily that migration from settlements is greatest in the case of the mentioned settlements (mainly that of the young, non-Roma population) and natural population decrease is also significant. With an ageing population, the young age distribution and high reproduction rate of the Roma population the increase of its ratio is even more spectacular.

Data based on auto-identification indicate correlation with population size. Practically, the greater is the population size of the given settlement the smaller the ratio of the Roma population will be. Based on the CIKOBI and UD data series, this relationship is less clear as increasing rates occur in the case of towns with greater population. This could be explained by, on the one hand, "hiding" appearing in auto-identification data, and on the other hand, "overestimation" by external assessors in the case of greater settlements, i.e. – in our opinion – both approaches could distort the results.

The ratio of Budapest is especially striking as uncertainty appears in both the CIKOBI (Kertesi & Kézdi, 1998) and the UD (Pénzes et al., 2015a) surveys. Apparently not natural population increase is in the background of the increase rate of the Roma population in Budapest (2.69-fold) exceeding the national rate (2.19-fold between 1984–1987 and 2010–2013) calculated on the basis of the two databases (this difference cannot be explained either by the distortion of external assessment alone – in our opinion) – see the data of Tab. 2. Based on the data of the survey – not representative – in 2016 mentioned before several times, focusing on Hajdú-Bihar and Szabolcs-Szatmár-Bereg counties, Budapest seems to be a migration target therefore significant migration gain can be presumed in the capital (Szilágyi & Pénzes, 2016).

Changes in the number of the Roma population, its spatial differences

Databases were analyzed in more detail than regional and county breakdown in order to expose more spatial correlations. Districts defined in 2015 (the districts of Budapest are fused) were used because in the case of settlements, anomalies had occurred in the CIKOBI database of 1984–1987 due to its methodology (mentioned before). Aggregation reduces outstanding values occurring in the surveys based on estimations. Besides, with the further fusion of aggregated council data available for Somogy county, all counties were involved in the study.

Values of the ratio of Roma people within the total population calculated for 174 districts and for Budapest showed rather high correlation coefficients revealing that the values of the data series based on concepts different from each other could be significantly different and still their spatial pattern could be similar (Tab. 4).

Table 4 Coefficients of Pearson correlation calculated by the ratio of Roma population within the Hungarian districts

Database	Census, 1990	Census, 2011	CIKOBI, 1984–1987	UD, 2010–2013
Census, 1990	+1.000	+0.901	+0.868	+0.868
Census, 2011	+0.901	+1.000	+0.918	+0.921
CIKOBI, 1984–1987	+0.868	+0.918	+1.000	+0.931
UD, 2010–2013	+0.868	+0.921	+0.931	+1.000

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

Closest statistical correlation is shown by the data series of the CIKOBI and the UD surveys primarily due to their similar methodology. However, correlation is less close in the case of the two censuses (but still quite strong). The correlation coefficient of the two databases with different methodology – those of the CIKOBI survey of 1984–1987 and the census in 1990 and those of the UD survey and the census in 2011– became stronger by the 2010s. This was influenced by the fact that in the last weeks of the UD survey the ethnic data of the census in 2011 became accessible and those were supplied by the respondents at several settlements. At the same time, the two databases could become closer due to an increasing trend of Gypsies admitting their identity (presumed by László Hablicsek (2007) among others) (the development of the methodology of censuses could have an effect as well with the possibility of selecting multiple ethnicities as well).

Higher values of data series aggregated for districts also drew attention to that significant differences could hide behind the correlation coefficients. For example, Ózdi district ranked second in the UD survey was not found in the top ten of the census in 2011 (it was ranked 15th). In the case of Szikszói district the opposite was observed (it was ranked 16th by the UD survey).

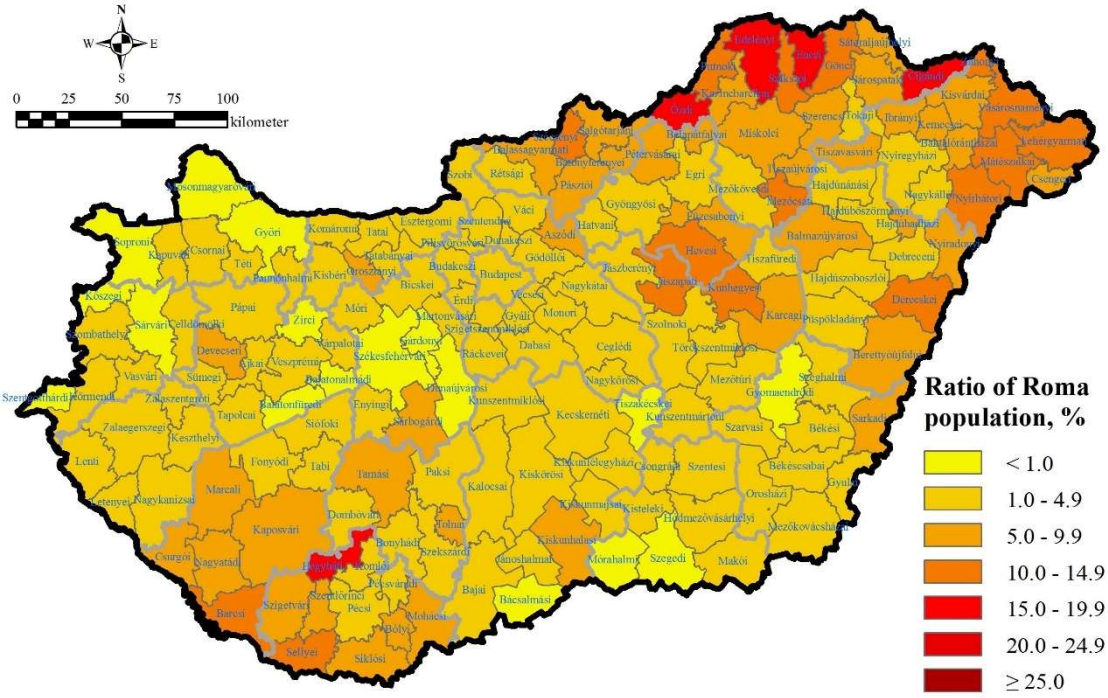
Table 5 Districts with the largest ratio of Roma population and their values, %

Rank	Census,1990		Census,2011		CIKOBI, 1984–1987		UD, 2010–2013	
	district	ratio, %	district	ratio, %	district	ratio, %	district	ratio, %
1.	Encsi	11.1	Edelényi	17.2	Edelényi	17.2	Encsi	39.0
2.	Kunhegyesi	10.0	Ózdi	17.0	Ózdi	17.0	Ózdi	37.8
3.	Záhonyi	9.3	Encsi	16.6	Encsi	16.6	Sellyei	35.1
4.	Vásárosnaményi	9.2	Cigándi	15.1	Cigándi	15.1	Hevesi	34.7
5.	Edelényi	9.0	Hegyháti	15.0	Sásdi	15.0	Edelényi	33.7
6.	Nyírbátori	8.3	Sellyei	14.9	Sellyei	14.9	Bátonyterenyei	32.5
7.	Ózdi	8.0	Fehérgyarmat	13.3	Fehérgyarmati	13.3	Cigándi	32.4
8.	Fehérgyarmati	7.5	Kunhegyes	13.3	Kunhegyesi	13.3	Mezőcsáti	30.3
9.	Gönci	7.4	Mátészalka	13.3	Mátészalkai	13.3	Nyírbátori	29.0
10.	Szerencsi	7.3	Szécsény	13.2	Szécsényi	13.2	Sásdi	27.9

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

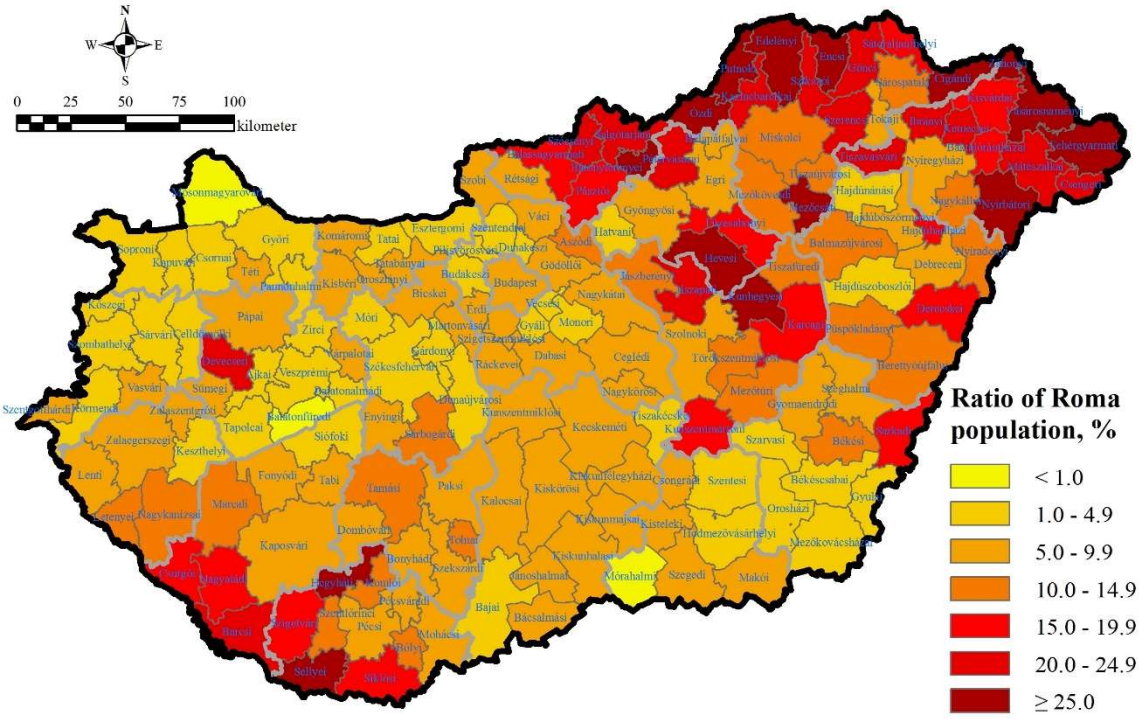
According to the UD survey highest Roma ratios were found in the Encsi, Ózdi, Sellyei, Hevesi and Edelényi districts (Tab. 5) in which the ratio of Roma people exceeded one third of the total population.

Figure 4 The ratio of Roma population in the Hungarian districts by the CIKOBI survey (1984-1987), %



Source: own construction based on the data of Kocsis and Kovács (1991) and Kertesi and Kézdi (1998)

Figure 5 The ratio of Roma population in the Hungarian districts by the survey of the University of Debrecen (2010-2013), %



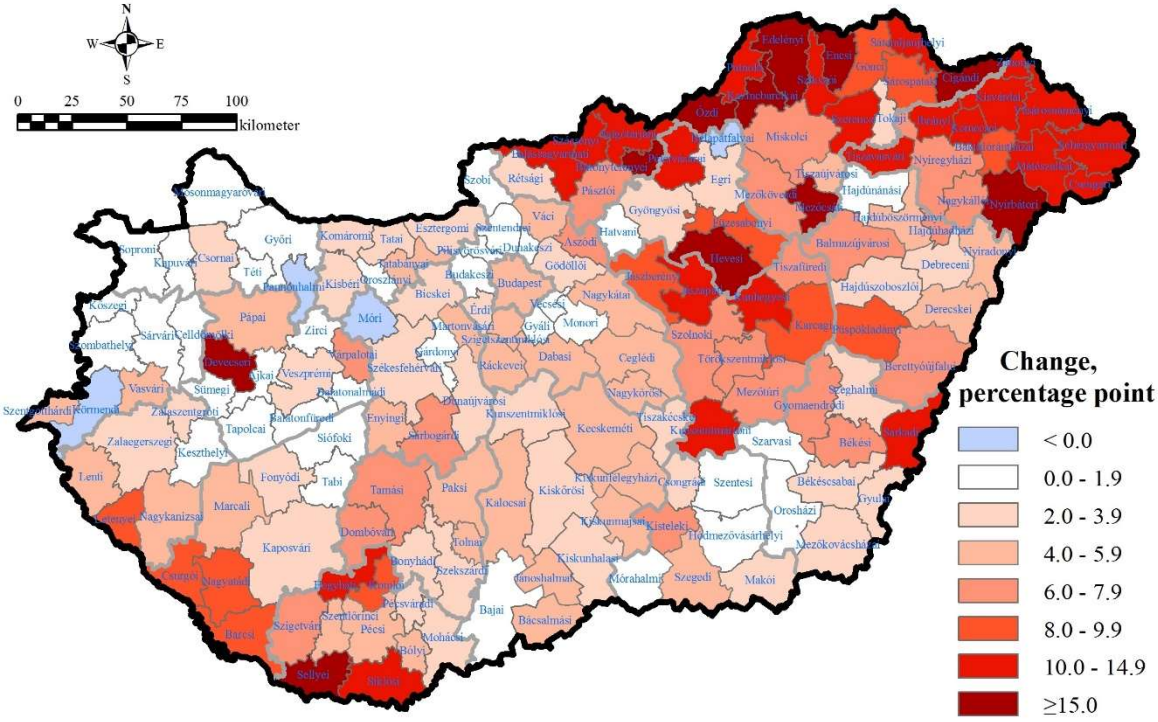
Source: own construction based on the data of Pénzes and Pásztor (2014) and the UD survey in 2010–2013

Similar regional ranking was obtained when the ratio of Roma pupils in primary school were estimated with typically higher rates (Papp Z., 2012). In 2010–2013 only a few districts were

found where the estimated ratio of Gypsies was less than 1% (Mórahalmi, Balatonfüredi and Mosonmagyaróvári districts). District ratios showed a significant increase between the surveys in the two time periods (Fig. 4 and 5).

It can also be detected that the ratio of the Roma population increased at greatest rate where it had high ratios already at the time of the CIKOBI survey (the ratio of Roma people within the total population increased by over 20 percentage points in the Bátonyterenyei, Encsi, Hevesi, Ózdi and Sellyei districts) (Fig. 6). Estimated data showed a slight decrease in some districts.

Figure 6 Changes in the ratio of Roma population in the Hungarian districts between the surveys of the CIKOBI (1984-1987) and the University of Debrecen (2010-2013), percentage point



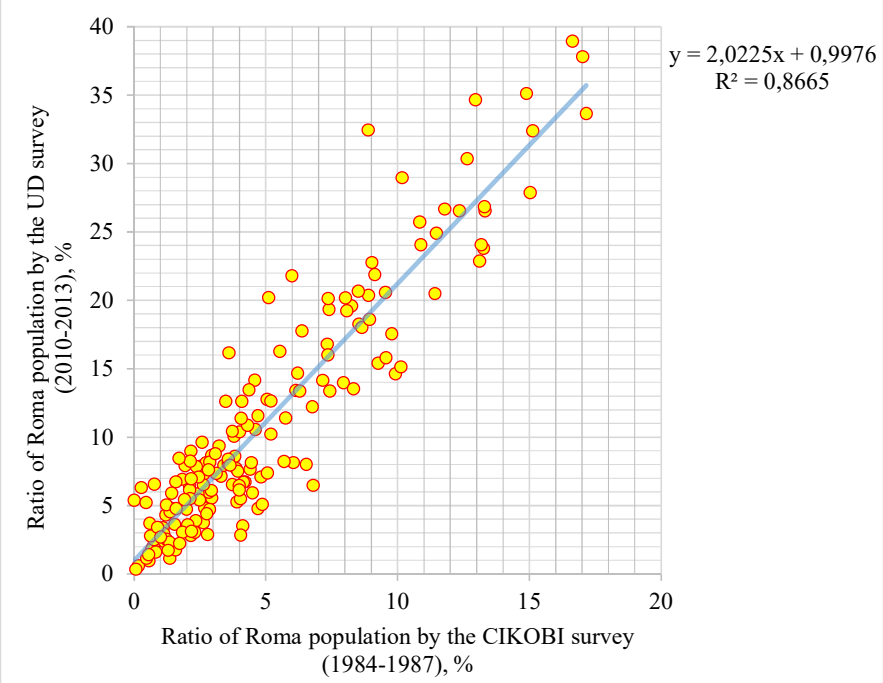
Source: own construction based on the data of Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014) and the UD survey in 2010–2013

The regional differences of the 6 percentage points increase on average are especially spectacular but the linear regression line fitted on the district values of the two surveys indicate the trend of the increase (Fig. 7). The close fit of the regression line (R^2=0.867) indicates the significant covariance of the two data series. The equation shows that the values of the district data were doubled (the national data also suggested this). As a result of doubling rates, the ratio of Roma population (calculated in percentage points) increased at a higher rate than the national average in the districts with higher base values. This also indicates the faster shifting of the

ethnic ratios that took place in a spatially concentrated way (this is not demonstrated at settlement level in this paper).

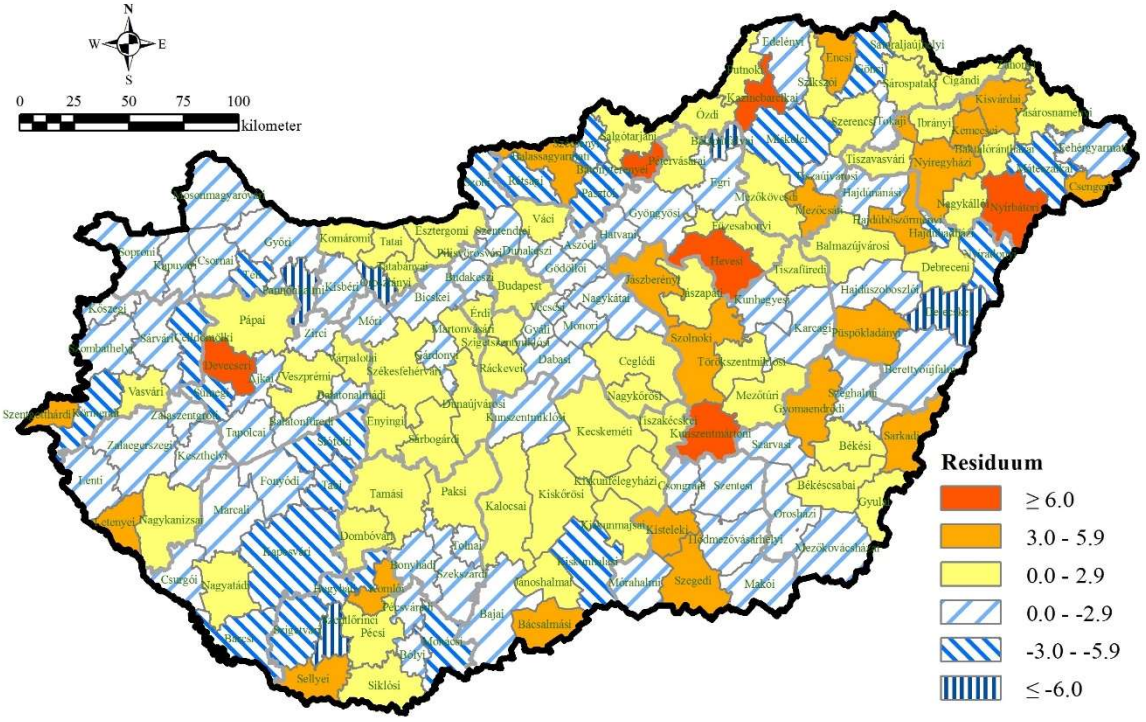
Naturally, greater-or-smaller differences from the regression line can be observed – partly because of uncertainties due to estimations and aggregations – that can be studied on the basis of the spatial distribution of the residua (Fig. 8). Greater differences (either with negative or positive sign) – in our opinion point beyond estimation uncertainties and differences in natural reproduction – indicate the migration of the Roma population (it is important to note, however, that the present database has limited suitability for studying the migration of the Roma population therefore this is not analysed in this paper).

Figure 7 Regression line fitted to the ratio of Roma population of the districts calculated by the surveys of the CIKOBI (1984–1987) and the University of Debrecen (2010–2013)



Source: own construction based on the data of Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014) and the UD survey in 2010–2013

Figure 8 Regional distribution of the residuum values of the regression formula fitted to the ratio of Roma population of the districts calculated by the surveys of the CIKOBI (1984-87) and the University of Debrecen (2010-13), %



Source: own construction based on the data of Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014) and the UD survey in 2010–2013

CONCLUSIONS

The primary aim of the present paper is to show the changes in the regional distribution of the Roma population over the last 30 years. No study has been performed to give a comprehensive picture about the spatial distribution of Gypsies since the CIKOBI survey in 1984–1987 (except for the census using self. This was targeted by the survey carried out by the colleagues of the University of Debrecen in 2010–2013 made with hetero-identification that covered all settlements of the country.

Comparing the results of the two mentioned surveys at national level, the number of the Roma population increased 2.2-fold from 400 thousand to 876 thousand people, while the ratio of Roma people within the total population increased from 3.7% to 8.8% (for comparison, the number of those declaring themselves Gypsy in the course of the 2011 census was almost 316 thousand people). Studying the geographical specifics, the regional pattern of the Roma population has not changed essentially. Most Roma people live today and the highest ratio of Roma people can be still found in the regions where the settlement/district ratio of the Roma population was highest in the 1980s. Such regions are found mostly in Northeast and Southwest Hungary, primarily cross-border, periphery areas.

While the spatial pattern of the Roma population hardly changed, significant changes can be found in the village-town relation causing a significant increase of the urbanization of Gypsies over the last 30 years. An increasing ratio of the population believed to be Roma live in Budapest and in towns with a population greater than 50 thousand people while their ratio in villages decreased. 62% of Gypsies live in towns and this is quite close to the average of the total population (71%). The phenomenon can be explained primarily – apart from identification issues – by internal migration.

Despite its increasing urbanization the ratio of the Roma population is still highest in small settlements. This settlement disadvantage is accompanied with a regional disadvantage as well. In the last 30 years the ratio of the Roma population within the total population increased with highest rate in periphery districts with disadvantageous location where the ratio of the Roma population was high already at the time of the CIKOBI survey. All these support the process – that was known mostly from case studies so far – that the Roma population has an increasing ratio in certain regions due to selective migration and the high fertility of Gypsies and as a result, these areas increasingly resemble ghettos. The mentioned processes are present in Hungary simultaneously and result in the increasing disparity of Roma ethnic ratios within the country.

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THE IMPORTANCE OF SOCIAL INNOVATIONS IN RURAL AREAS

A TÁRSADALMI INNOVÁCIÓK JELENTŐSÉGE A VIDÉKI PERIFÉRIÁKON

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Abstract

The aim of this study to analyze the difference between the classic sense of mechanical-technical innovation and the social innovation, as well as the analysis of the impact of social innovations on employment-enhancing and the role of it in the rural development. I have analysed the literature of the rural development and social innovation. The definition of social innovation in the literature is not yet uniform at the same time all, novel and innovative idea to overcome existing social problems can be considered as social innovation. The successful examples of social innovations play a key role; these can be observed in the local development or in the rural development. Those development strategies based on the participation of the rural society's members can be successful, which expect themselves as an innovation, and they suppose the renewal of the society. I have collected such social innovations (Hernádszentandrás – innovative public employment program involving the Romanises, Belecska – social land program, Nemesvámos – innovative manager approach and Poroszló – innovative tourism development) that have been developed in recent years either to develop underdeveloped areas or to catch-up deprived marginalized social groups and I have analysed these innovations and made some comparisons. As a result, the social innovations are playing an increasingly important role in rural development, as for the termination of the existing problems and it is also necessary the active involvement of the citizens and civil organizations. To do this, we need a local society that supports the local identity, the cohesion and the willing to do it locally.

Keywords: rural area, social innovation, employment expansion

Absztrakt

A klasszikus értelemben vett műszaki-technikai innováció és a társadalmi innováció közötti eltérést, valamint a társadalmi innovációk foglalkoztatás bővítő hatásának elemzését és a vidékfejlesztésben betöltött szerepét tűzte ki célul a tanulmány. A társadalmi innováció definiálása a szakirodalomban még nem egységes ugyanakkor minden, a fennálló társadalmi problémák leküzdését szolgáló újszerű, innovatív ötlet társadalmi innovációnak tekinthető. Olyan társadalmi innovációkat gyűjtöttünk össze, amelyek vagy elmaradott térségek fejlesztésére vagy hátrányos helyzetű marginális társadalmi csoportok felzárkóztatására születtek az elmúlt években. A társadalmi innovációk sikeres példáinak kiemelt szerepe jut, ezek megfigyelhetőek a helyi fejlesztésben vagy a vidékfejlesztésben is. A vidéki társadalom tagjainak részvételére alapozott azon fejlesztési stratégiák lehetnek sikeresek, melyek maguk is innovációnak számítanak, illetve a társadalom megújulását feltételezik. Úgy véljük, hogy a társadalmi innovációknak egyre nagyobb szerep jut a vidékfejlesztésben, hiszen a fennálló problémák megszüntetésére a műszaki és technikai innovációk már nem elégségesek és szükséges az állampolgárok, a civil szervezetek aktív szerepvállalása is. Ehhez pedig a helyi identitást támogató, a kohéziót és a helyben való tenni akarást segítő helyi társadalomra van szükség.

Kulcsszavak: vidék, társadalmi innováció, foglalkoztatás bővítés

INTRODUCTION

The definition of social innovation in the literature is not yet uniform at the same time all, novel and innovative idea to overcome existing social problems can be considered as social innovation. The successful examples of social innovations play a key role by rural areas. These can be observed in both local development and in rural development. Those development strategies based on the participation of the rural society's members can be successful, which expect themselves as an innovation, and they suppose the renewal of the society (Nemes-Fazekas, 2006). In this study, we present Hungarian social innovations, that were completed in rural areas and have also had an increasing effect, such as an additional profit.

DIFFERENT APPROACHES OF THE SOCIAL INNOVATIONS

The theoretical bases of the innovation first appeared in Schumpeter's study in 1934, describing five basic cases of innovations: selling new goods or the novel production of old goods, the introduction of new transportation methods; exploring new markets, the use of new production materials and the development of new market conditions (Schumpeter, 1980). Schumpeter meant professional development by the innovation. According to the Schumpeter innovation model, the companies implement innovation-based technological developments and consider them as the most important source of the economic growth. The competitive advantage of the advanced economies depends on the knowledge and the technological development, and knowledge is considered the basis of innovation in every case. The widespread dissemination of knowledge-based activities plays an increasingly important role in the competitiveness of each county and region. Knowledge – as an integral part of innovation – is part of that process that leads to innovation, and contributes to the increase of in prosperity and competitiveness (Schumpeter, 1980).

According to Rechnitzer (1998:32) an innovation milieu can be seen as a group of economic and production contacts that can be recognized in a given geographical area that create coherence in the production system between the economic characters and in the production cultures. It is possible to contribute to the dissemination of innovation processes with collective learning. The development of innovation milieu is geographically bound, as the innovation activity will be significant where the human capital and the collective knowledge are present in a given area. The classic Schumpeter innovation does not provide a sufficient solution to the problems of the rural society, as it has mainly focused on technical innovations and

improvements, so an expanded view needs to be considered. A review of the different definitions of the social innovations follows.

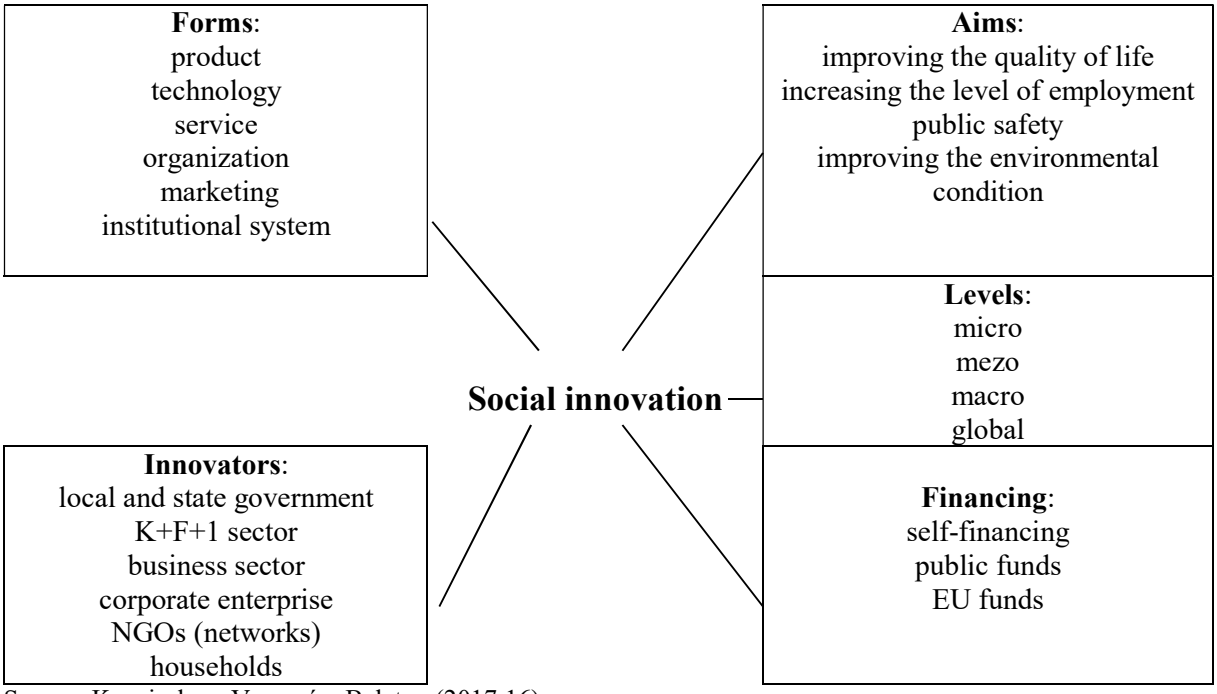
The definition of social innovation in the literature is not uniform (Benedek et al., 2015; Benedek et al., 2016; G.Fekete, 2015b; Kocziszky et al., 2015; Kocziszky et al., 2017; Varga, 2017) yet at the same time all novel and innovative ideas to overcome existing social problems can be considered as social innovation. The first literature appearance of the concept is related to the name of Drucker (1985), who emphasized the importance of social innovations in the 1980s. According to Ogburn the combination or modification of the available intangible (cultural) elements will help the establishment of new products (Ogburn 1957:168). According to Whyte, the social innovations are the latest solutions to solve human problems (Whyte 1982:2). Another approach is that the amount of new solutions that support goals also help to better manage the problems which are a result of the new organization forms, new regulations and new lifestyles (Zapf 1989:177). Nowadays Mulgan's definition is popular, social innovation refers to innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly diffused through organizations whose primary purposes are social (Mulgan, 2006).

G.Fekete (2015a:282) believes that the social innovation may mean simultaneously the involvement of social resources in the function of the economy (which is a new thing compared to the previous ones) and the new innovative solutions which satisfy social claims; as well as the development and dissemination of organizations with primarily social goals. The latter practically includes the former one. According to today's interpretation, an innovation is social if it meets the following criteria: (1) it is guided by social value; (2) the idea comes at least from the civil society, social movements; (3) new social cooperation or new forms are used in their development and implementation; (4) the impact on society.

The social innovation starts a process that leads to an improving quality of life and a more favourable economic and social situation for both the centre and periphery. Kocziszky et al., (2017:16) state that social innovation provides new or novel answers to a community's problem with the aim of increasing the community's well-being. Varga (2017:614) believes that social innovation brings new answers to the everyday problems of the given community in order to improve the community's well-being, and as a responsive tool to the challenges, it also leads to a novel approach in the treatment of the regional disproportions. In the core areas, the technical innovations provide a solution in the development questions of the quality of life, but as the peripheral areas are lagging behind it is necessary to take into account such new innovations, as social innovations. At the same time I do not agree with Varga's statements because the

social innovations play a considerable role in the development of quality of life, not only in the peripheral areas, but in the core areas as well. A good example of this is the scope of activities and the social aim of the foundations of Miskolc which will be presented in the later chapters of this study.

Figure 1 The relation system of social innovation



Source: Kocziszky – Veresné – Balaton (2017:16)

The social innovation may contribute to the improvement of the quality of life of people living in peripheral or rural areas and may help to catch up in social and economic terms. Figure 1. illustrates the close relationship between the social and the science innovations. On this basis, it can be stated that there is a close relationship between social innovation and economic development. Nowadays, the importance of social innovation is not less than the technical or economic innovation, and the social problems caused by technical and economic innovations can be solved by innovation (Kocziszky et al., 2017).

According to Caulier-Grice et al. (2012) there are five core elements of social innovation: (1) novelty, (2) from ideas to implementation (there is a distinction between invention and innovation), (3) meets a social need, (4) effectiveness and (5) enhance society's capacity to act.

According to Seelos and Mair (2017) the social innovation is not the Holy Grail, because of the overeating the value of innovation, the undervaluing the importance of failed innovation and the under appreciating the difficulty of innovation. They wrote that there are some difficulties (for example how to prevent people from going into too many new directions) and

the process of the learning social innovations is very important. They argue that the purpose of innovation is the creation of social impact, and its success depends on three interlinked factors: understanding the societal problem or social need; internal capability; and a strong sense of mission and strategy.

THE "PROBLEMS" OF THE RURAL AREAS AND THE RURAL DEVELOPMENT

The concept of the rural areas and the countryside itself has undergone a major transformation in Hungary in the last decades. In the European Union, there is no definition of the same rural concept for all member states (Vincze, 2013). The three dimensions of rurality are described by Káposzta – Nagy (2013). These are the occupational, sociocultural and ecological dimensions. In terms of employment, rurality is the synonym of agriculture (or other raw material production). In a sociocultural sense, it means such a lifestyle forms the basis of different values, behavioural patterns and social attitudes from the urban ones. Ecological rurality is the recognition of the importance of the natural environment from the qualitative aspects of the human's social life (Káposzta – Nagy, 2013:73). I think that currently the occupational dimension is no longer applicable because the rural area cannot be fully identified with agriculture. As there are several different approaches to the concept of the rural areas, different approaches are also known to the concept of the rural development. According to Vincze (2013), rural development means self-sustaining and sustainable development of the capacities of rural area. I believe that the self-sustainers should not be used here literally, but rather less strong dependence on the centre regions and their markets.

Endogenous rural development builds on local natural and social resources as well as onto the local culture or identity. Because of the peculiarities of development in peripheral and rural areas, the appearance and the trips of the innovations are different as in the centre regions. The composition of the society in the peripheral region and its different use of space, as well as its relation to the culture and customs, require a different path. It is needed deeper acceptance of the new solutions and innovations; it takes more time. Foreign and domestic good practices highlight that in the rural and peripheral innovation:

- there is no recipe, every solution proved to be successful is unique;
- new products and procedures are created in practice, not in scientific workshops;
- social innovations are as important as the mechanical-technical innovations;
- the spread of the innovations takes place through horizontal (non-hierarchical) relationships (G. Fekete, 2016).

Tab. 1 summarizes the special social purpose and task that can be assigned to the specificities of rural areas.

Table 1 Potential areas of social innovation in rural areas

rural pecularity	social purpose	special task
low population concentration	reducing deprivation/ making services available	introduction of alternative (small-scale) service mode: education, culture, health, social care, communal services
	territorial and social integration, inclusion	organizing cooperation and integration, building internal networks, improving horizontal transport
contact with nature	to provide a healthy living environment for future generations	the creation of the conditions of of environmental sustainability: nature protection, landscape maintenance, use of alternative energy sources, waste management, home renovation, settlement maintenance
	to ensure the livelihood, strengthening self-determination	utilizing local (natural and cultural) resources: regional food production, expanding recreational opportunities, offering residential properties
slower cultural changes	the promotion of school inclusion, enabling innovations, preservation of identity, achieving direct participation, capacity enhancement	expansion of knowledge: local knowledge, expertise, development of digital literacy (trainings), preservation of cultural heritage, traditions, community strengthening
geographical distance from the centres	achievement of markets	development of network connections: help commuting, the achievement of markets and its organization, (physical, informational, social) networks' building, presence and representation in the urban and regional opinion formation and decision-making

Source: own editing, based on G. Fekete (2016:82)

As a result of low concentration of the services that are available, tasks can be assigned to introduce alternative services. The natural proximity can be an advantage in the peripheral areas if healthy living and livelihoods can be provided for future generations. Building upon local resources will ensure environmental sustainability and strengthening of the local economy. Slower cultural changes also strengthen the local community to the easier reception of the social innovations, resulting from the preservation of the local knowledge, old values and traditions. The local knowledge is an important endogenous resource for the country and the preservation and the enhancement of the local culture (Kulcsár, 2017) and the diversity of members of the local society. In the case of distance from the centres the social goal is to reach the urban markets, thus strengthening the urban-rural relations.

The members of rural society increasingly need to apply novel solutions to alleviate the unfavourable economic and social processes. The main problem is the rural society's considerable decline in population, which can be identified by the challenges of a declining and aging society typical of the European Union as a whole, as well as by the migration processes (the strong inner migration also increases the adverse situation in the case of Hungary). The demographic composition of rural areas provides information on the human resources base, which also indicates the state of the labour market. Rural areas are characterized by a low number of workplaces and the lack of service sectors, leading to a decline in the population of rural society (Koncz et al., 2015). Significant income disparities and the Hungarian regional disparities further exacerbate the 'unfavourable' rural image (Szendi, 2017). In the disadvantaged rural areas, a fundamental problem is that minimum private capital can be mobilized so development is largely realized from public funds (Koncz et al., 2015). At the same time, it is unfortunate that significant costs can have a relatively small impact on development, which increases territorial differences (Finta, 2015).

Bell and Jayne (2010) deals with the creative countryside in the United Kingdom. They argue the need to consider 'the countryside' as a place where the creative economy is differently manifested and articulated from the now standard 'creative script' based on cities.

Social innovation can be one of the devices of the rural development as Szörényiné 82015:205) composes: the social innovation is an inevitable element of rural development. However, it is a basic condition that the rural areas be viable with an active community, strong economy and a good public utility service. Five basic principles of the rural development have been defined. These include innovation, sustainability, competitive rural space, acceptance and establishment of knowledge-based rural society and the need for new functions (Szörényiné, 2015). One of the most well-known examples of social innovations in the rural areas is the establishment of the network of village caretakers, as well as micro-regional organizations created as a bottom-up initiative. According to G. Fekete (2016) the rural area can be considered a spatial loser of modernization of the rural population and the deteriorating indicators of living conditions.

Nowadays, the concept of wage labour in the previous sense cannot succeed. It needs a new interpretation and has to be given a value-creating, social organizing function with new goals and new contents that are much more present in rural areas (Rimler, 1999; Vobruba, 2000; Csoba, 2006; G.Fekete, 2015a) Therefore, in the post-industrial society, the employment model is based on the concept of changed work and shows a shift towards a mixed economy and a solidarity economy. We would like to deal with the labour-market issues by examining the

problems and challenges of society because most social innovations are trying to solve the existing employment problems, but they are not enough in themselves. Work was interpreted as the means of achieving wealth, while unemployment was interpreted as the misfortune of the society.

SOME GOOD EXAMPLES OF HUNGARIAN SOCIAL INNOVATION

We have collected such social innovations that have been developed in recent years either to develop underdeveloped areas or to catch-up deprived marginalized social groups. On this point, we observe that the range of social innovations is much broader, and the examples presented by us are truly exemplary. Special caution should be exercised, because it more often occurs recently that we call something as a social innovation which is in fact not.

Table 2 Some good examples of social innovation

Type of social innovation	Settlement	Primary aim
innovative public employment program involving the Romanises	Hernádszentandrás	increase employment, rural development
social land program, social employment program	Belecska	local economic development
innovative manager approach	Nemesvámos	local economic development
innovative tourism development	Poroszló	tourism development

Source: own editing

Innovative public employment program involving Romany in Hernádszentandrás

Hernádszentandrás is famous about the the public employment program, the village is located in the North Hungarian region. The production and sales of vegetables is under the brand name of Bioszentandrás. They have been engaged in organic farming for many years, which further increases the market value of the produced raw materials. It provides a job opportunity for 25-30 people (Katonáné et al., 2017). It is important to emphasize that for the low-status population, public work is not in the wrong place in the hierarchy of available jobs (Kovai, 2016). The social innovation is often appointed as an essential part of agricultural and rural innovation (Bock, 2012), which are characterised by co-production of economic and social values or benefits. The social innovation here lies not only in the production of vegetables, but in that social process which takes place through the involvement of civil society characters. We regard it as a social innovation because the land and the workforce were available to create a new farming model, but the knowledge, resources and the contacts were missing. These were supported and generated by the “local hero”, the mayor’s deputy, and to the targeted actions related to his person itself and his ideas. Furthermore, it can be considered as an innovative

solution because it also includes the idea of social responsibility, as it rejects the processes that focus on profit maximization. Learning is a feature of social innovation. It is a process that can be detected by the change management understanding of the problem (Nemes & Varga, 2015). Thus, social learning can be defined as a kind of capacity that enables the community to do such an activity what it would not have been able to do before. (www.bioszentandras.hu)

Social land program in Belecska

Belecska is a village with 365 inhabitants in the Tamási district in Tolna County, it was launched a social land program. After the change of regime, the inhabitants of the settlement became unemployed by the dissolution of the TSZ cooperative (Petrovicsné, 2006). The fundamental purpose of the social land program is to eliminate the symptoms of the crisis (Keller et al., 2016). The mayor definitely wanted to make it possible for families with small children to have a job locally, because he was afraid of a mass migration. He offered job instead of the social aid for the unemployed people (Keller et al., 2016). The mayor's person is also vital at this social innovation, as he was the mastermind, and he kept the interests of the settlement in mind. For more than fifteen years, there has been a purely public employment program based on vegetable and fruit production. Within the framework of the social land program, vegetable and fruit production has started at the end of the '90s from a tender source; they dealt with strawberry growing initially. The strawberry brought in money well, which made it unambiguous that the Belecska vegetable and fruit-growing may have future. As a result, the program has been continuously expanded, which has continued steadily ever since. Production is currently taking place on 25 hectares: on the one hand, the government's own land is involved and on the other hand long-term rentals are also used. Monoculture cultivation based on only strawberries for a short time was soon expanded, which has led to the introduction of many vegetable, fruit and grape varieties; and growing and cultivating additional plants is included in the plans (Németh, 2011). According to Keller et al. (2016) this is a model program to promote the introduction of the social economy in Hungary.

The system working in Belecska is called a social land program in the press and in the general terms, in the traditional sense it is not a land-work program. The essence of the classic social land-works programs is that those who do not have the necessary resources for agricultural production, those who cannot operate it efficiently, and those who are socially disadvantaged, have the opportunity to provide small-scale housing and livestock farming with the utilisation of individual and community and local resources (Jász-Sarvák-Szoboszlai, 2003:

139). The Belecska program rests on foundations differing from this ideal type. By placing the production and sales within the framework of a non-profit enterprise, the government has created a unique local employment solution that is inseparable from the land, but not a land-work program. It is more appropriate to call the Belek system as a social employment (social economy, community based economy, village economy) program based on the government's enterprise (Németh, 2011).

For the operation of the program, in 2002, because of the administrative problems and the VAT regulations, the Municipal Public Utility Company of the Government of Belecska, which is a sole proprietor of the government, was established. It was transformed into a non-profit Ltd. on 1 July 2009. The program gives job for the locals nowadays, as well. Belecska supplies itself from vegetables and fruit, and also produces for the regional market. As a result of the land-work program, the initial 30% unemployment rate fell to a negligible level. The program has significantly reduced the uncertainty of life, it is a very important indirect result that children are born again in the settlement, population decline has stopped; it is essentially stagnant, and in some years the population is growing slightly. As a result of the program, social assistance ceased to exist, unemployment was virtually eliminated in the village, and all this was achieved through community management.

The Belecska case is instructive because most social innovations are not only successful in themselves, but there are also good examples of its adaptation. For social innovations, the practice of transplanting to other areas would be very important, as it is good practice. We can see that even in the settlements of the Tamási district, in the settlements similar to Belecska, it was not possible to take over this relatively simple social innovation. The spontaneous adaptation of the Belecskai program may be hindered by at least some of the essential elements of the program. However, the Belecskai case is not as clear to the other settlements, although the mayor has already introduced the key elements of community agriculture in several social forums, but the knowledge of it is little. Something else is needed for the adaptation, and this is the ambition for self-preservation, which was successfully implemented in Belecska. The other settlements with similar economic and social conditions in the Tamási district do not have land in the outskirts of the countryside, nor do they have any capital for buying or renting land. According to Németh (2011), there is no any special feature of Belecska behind the achievements of the rural economy program, that is, there are no local factors or resources that might be difficult or expensive to take over or reproduce to prevent other settlements from trying to solve their employment problems in this way.

Innovative management approach at Nemesvámos

Nemesvámos is not far from the Lake Balaton with a population of 2500 people, based on the latest census data. After the change of the regime, not only the successful tenders had a big impact on the settlement, but the multinational companies' settlement also had an effect. Alcoa – Köfém Ltd. is based in Székesfehérvár and one of its sites can be found on Nemesvámos. It currently employs 1700 people, of whom 120 employees work at the Nemesvámos site. In August 2000, the HARIBO factory was built in a green zone on 23,000 square metres. In 2006, the two-shift work schedule was expanded to three shifts, with a workforce of 160 people. In almost four years, the factory increased production by six-fold, and the number of employees has tripled. Nemesvámos has attracted more and more businesses, thanks to its favourable business environment and local government regulations. For example, we can mention the free utilities transfer and the implementation of road constructions without contribution. Initially, the measure of the local trade tax was only one or two thousandths**;** however, over the years this has increased with the developmental rate of the enterprises.

In addition to increasing local economic development, Nemesvámos also played a important role in community development. During this time, local authorities emphasized that, among other things, such implementations will be accomplished without contributions from residents. As a result, the households can keep or even increase their savings, so local incomes can be spent locally. In 2010, a new mayor was elected in the settlement. The biggest change was caused by the fact that the new mayor started his work with a management approach. He considered Nemesvámos an enterprise. Continuing the previous work, new ideas were formulated resulting in the establishment and the maintenance of financial independence for the village. Furthermore, the creation and the retention of independent decision-making possibilities were critical. As a result of the needs of the residents, local products have emerged, creating a local market. The employment has started to grow due to the more than 260 undertakings. (http://www.nemesvamos.hu/)

Innovative tourism development in Poroszló

Poroszló is a village of 2900 inhabitants in the country of Heves, which is known for its ecological centre of Lake Tisza. In the years following the change of regime, the settlement was not able to exploit its existing natural resources yet. In 1995, thanks to the leader of the settlement at the time, a change of attitude and tourism development occurred. Several services are now available in the settlement, such as equine tourism, community spaces and fishing

opportunities. One of the most loved and most visited locations is the Ökocentrum. There are 11 civil society organizations, which are crucial for generating social innovations. Today, Poroszló has so many tourist attractions and opportunities connected to them that they have gained a reputation, not only for the area of the Lake Tisza, but also to the whole of Hungary. The Ökocentrum is made up of several diverse parts, which showcase the wildlife of Lake Tisza. In order to achieve such successful tourism results for the village, it was necessary not only to reinterpret and use the local sources. For the members fo the economic and tourism industry in the small town to work together (Kis & Tóth, 2016).

Social innovation built on tourism also plays a role in increasing employment, which is a key feature in such a low-population settlement. Poroszló was able to see, realize and rethink its local conditions, and the possibilities that could be achieved in their community including providing space for the expansion of ecotourism and the initial quantitative and qualitative development of the enterprises based on it. In addition, the community played an outstanding role in collaborating and helping each other to promote these actions.

CONCLUSION

The local governments have an important role by the above illustrated social innovation examples, because they are the main actors. The aim of local governments was to mobilize local resources, involve stakeholders. The settlements receive normative support (for example for the public work program) from the Hungarian government. Pálné (2019) points out that although Hungarian local governments received considerable autonomy following the systemic change, they have gradually weakened and lost their significance and capacities ever since. Local governments lost most of their previous competences in public services. Not only did local governments lose their position as public authorities in Hungary, but partly as a result of these losses, their local relations systems do not promise to pursue an economic development strategy based on local resources and co-operation. In a previously fragile, in many ways asymmetric power structure, local governments were placed on the periphery, not only in the national but also in the local dimension of governance (Pálné, 2019). This is a major problem by the settlements and their social innovation.

The above described successful Hungarian social innovations are truly a model approach and had a positive effect on those settlements where they were implemented. I chose Hungarian examples of settlements that had similar characteristics. The social innovations and the rural developments are in close connection with each other. Innovative solutions to the earlier

existing problems can be adapted to any other settlement, as in many cases it is necessary to strengthen the capacity of the population and a strong characteristic, “local hero”, as well as the idea itself and the will. Most social innovations will be successful if the host environment and the inhabitants of the settlement are willing to take part in a development or at least not hinder its implementation. The process of social learning is also important to the acceptance of the social innovations. From the above mentioned example it can be seen that the civil people play a significant role in the solution of the existing social problems for rural areas, since these areas or socioeconomically disadvantaged labour-market groups themselves are not able to solve their problems.

For social innovation to be realized, it is necessary to have a local contact who is key to the implementation of ideas and who can work with local people beyond their direct environment and community. If its acceptance occurs relatively quickly, the spreading of innovation is fast, its impact is irreversible, and its sustainability is high. As a result, the social innovations are playing an increasingly important role in rural development, as for the termination of the existing problems and it is also necessary the active involvement of the citizens and civil organizations. To do this, we need a society that supports its local identity, the cohesion and the willingness to implement innovation locally.

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A GENERATIONAL COMPARISON OF MALL-VISITING BEHAVIORS IN ÁRKÁD BUDAPEST: UNDERSTANDING SENIOR CONSUMERS

LÁTOGATÁSI SZOKÁSOK GENERÁCIÓS ELEMZÉSE AZ ÁRKÁD BUDAPEST BEVÁSÁRLÓKÖZPONTBAN: IDŐSKORÚ VÁSÁRLÓK VIZSGÁLATA

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Abstract

The market situation of European shopping centres has been significantly changed compared to previous decades for a number of reasons. Among other reasons, it is important to underline the ageing European population. Furthermore, the ratio of elderly is projected to increase further in Hungary. These demographic processes lead to wide range of socio-economic impacts on the country. One of the consequences that senior customers are becoming increasingly important target group for shopping centres nowadays. They have already had a considerable purchasing power in Budapest. Meanwhile, shopping centres in the capital city are still focusing on young generations. For this very reason, researches required to get a better insight into the behaviors of senior customers.
This paper aims to explore differences and similarities in shopping behaviors between different age groups of customers in the case of Árkád Budapest. The author gathered published official statistical information from the website of Hungarian Central Statistical Office (HCSO) and analyzed the current demographical situation in Budapest. The analysis of mall-visiting behaviors is based on questionnaire which contains responses of 156 purchasers. Descriptive statistical methods were implemented by the author. Expected research findings are support to increase our knowledge about mall-visiting behaviours of senior customers in Budapest.

Keywords: ageing, Silver Generation, spatial moving behavior, shopping mall, Budapest

Absztrakt

Az európai bevásárlóközpontok piaca jelentős változáson ment keresztül az elmúlt évtizedekben. Fontos kiemelni az okok közül az idősödő európai népességet. Magyarországon is növekszik az időskorúak aránya. Ezek a demográfiai folyamatok nagy hatással vannak az ország társadalmi-gazdasági környezetére. Az egyik fontos következmény, hogy napjainkra az időskorú vásárlók egyre fontosabb célcsoporttá válnak a bevásárlóközpontok számára. Budapesten már jelentős vásárlóerővel rendelkeznek. Éppen ezért szükséges, hogy jobban megértsük az időskorúak vásárlási attitűdjeit.
Jelen esettanulmány az időskorúak és a fiatal korosztályok között megfigyelhető generációs különbségek feltárásával foglalkozik az Árkád Budapest potenciális vevőkörében. A szerző a Központi Statisztikai Hivataltól származó hivatalos statisztikai adatok alapján vizsgálta az aktuális demográfiai helyzetet a fővárosban. A bevásárlóközpont látogatási szokásainak elemzése egy 156 fő kérdőíves mintán alapszik, amit leíró statisztikai elemzési eszközökkel vizsgált. A kutatási eredmények hozzájárulnak, hogy a budapesti időskorú vásárlók látogatási szokásait megérthessük.

Keywords: öregedés, ezüstgeneráció, térbeli mozgáspálya, bevásárlóközpont, Budapest

INTRODUCTION

According to HCSO, Hungary's population is aging and the ratio of elderly is projected to increase further (Földházi, 2012). This change in social structure leads to wide range of socio-economic impacts on the country (Vukovich, 1991; Hablicsek, 2004; Molnár & Koczor-Keul, 2013). Obviously, it has a significant effect on the retail sector. The state of shopping malls in small-scale or local commerce has also changed compared to before (C&W, 2017). Partly for demographic reasons, the clientele of shopping malls is undergoing a change in structure, leaning towards the older generations.

Moreover, the current silver generation has different attitude towards shopping centres than the previous one. Most of senior shoppers didn't use shopping malls around the time they started appearing in Hungary in the last millenium. By contrast, older generations are going to the mall more commonly in recent years. GfK Hungary (2019) conducted research on the visitors of shopping malls in 2018. In their research, they concluded that while mainly those below 30 years of age are still the ones that mostly make up the clientele of shopping malls of Hungary, ratio of middle-aged and senior purchasers has become significant as well. These obvious changes in demographic processes and shopping behaviour must become a drive to shopping malls' management and units to focus their business policy on the older generations more in the future (Kovács & Sikos T., 2019).

This is a hard to realise task from multiple perspectives. On the one hand, older generations are extremely heterogeneous buyer groups on their own. This makes it hard to affect them with a focused marketing strategy. On the other hand, their generational specifics cause them to need more attention compared to younger generations (Myers & Lumbers, 2008). A relevant example is the adaptation of online communication channels and tools, which is already a mainstay in the younger generations' everyday lives. However, we must also mention that even among the older generations, their usage is spreading steadily (NMHH, 2018). Furthermore, this group has already shown a relatively high level of adaptation in Hungary in 2018. Yet, the speed and method of adapting they show is different to younger generations as well.

My general goal with this research is to analyse the attitudes the clientele of Árkád Budapest shows, and to unearth generation gaps. I aimed to understand the differences in visiting habits among those below 30, between 30 and 60, and above 60. This study is made up of three sections. The first part of the study deals with the choice of location of Árkád Budapest. The second part focuses on the demographic state of the mall's direct neighbourhood. Finally, the third part contains the results of a questionnaire conducted in Árkád Budapest. I also touch on

the frequency of the mall's clientele visiting, the average amount spent per capita, and the transportation of choice of the clientele. The analysis also deals with the frequency and value of online purchases, since this is something that has a fundamental effect on the visiting numbers of the physical location of the sales.

ATTRIBUTES OF HUNGARIAN SENIOR CONSUMERS

Generation marketing within developed market economies isn't considered a newcomer of marketing practice anymore. In the United States, it's been in use since the 1950's, since the business sector quickly identified the usefulness of segmenting the consumers by age groups (Konczosné et al. 2010). During the following decades, most welfare countries with mature economies generally applied it, and the topic of senior marketing amassed a significant amount of literature sources (e.g. Schiffman & Sherman, 1991; Angell, Megicks, Memery, Heffernan & Howell, 2012; Rousseau & Venter, 2014).

By the time of the Millennium, not only such countries dealt with such a marketing practice however. Even in the ex-Social Bloc countries of Eastern Europe, not to mention developing countries are also applying it in practice. Of these, China is one deserving a special mention, as it has a significant business potential, and at the same time, a unique demography (Eberstadt, 2019). In post-socialist countries (one of which is Hungary), marketing science only became important after the Regime Change (Sikos T., 2009). This late entry had palpable effects both in the practical application of the senior age group's research and that of consumer attitude of such countries, Hungary included. This is exactly the reason for the region having many unique features, which can't be likened to either the United States or Western Europe. However, we can also clearly see that the number of studies dealing with the topic is on the rise, albeit gradually, since the Millennium happened (e.g. Csizmadia & Győri Szabó, 2014; Lesakova, 2016; Dołhasz, 2016).

However, methods of marketing analysis were mainly developed in the Western world. Nowadays, the groupings mainly accepted in generation marketing are based on Generations, a work by Neil Howe and William Strauss (Strauss & Howe, 1991). In this book, the authors differentiate between six active groups around the Globe. Members of a generation are at the same time, the representatives of an age group hard to determine perfectly. However, their historical experiences align, since they lived through the same socio-economic and cultural phenomena during their lifetimes. Therefore, we can say that there are multiple similarities in their behaviour patterns, and as such, their consumer habits (Törőcsik, 2009). Today, most of

the senior age group's members are from the "baby boomer" generation. They were born between 1946 and 1960, after the World Wars concluded. In this generation, we can also find the so-called Ratkó Children (1952-1956), which makes this age group the largest in Hungary.

They are different in various aspects from their preceding generation, the "veterans", who were born before 1945. "Baby boomers" are mostly conservative in their outlook, but they are more open than "veterans" who were born before the war, hence, of strict norms of life. They weren't subject to such unreasonable financial constraints that plagued their parents. Furthermore, most of them lived their golden years in a long-lasting World Economy conjuncture, mostly in a secure way of life. This had an effect both on the relative size of savings and the consumption initiative. However, "baby boomers" were all born into socialism, meaning they don't know the feudal political-economic system of earlier days, but many of their members also consider market economies somewhat foreign (Szabó-Szentgróti et al., 2019).

Above age 60, each age group shows an increase in the female ratio, which is another factor affecting consumer behaviour. It's also important to note that for those of higher age, households made up of a single individual are more prevalent. This is especially notable due to the higher mortality rate of men (Molnár & M. Barna, 2012).

The income of the elder generations compared to the others can also be called advantageous. According to HCSO, the net income per capita was actually the second highest in the elderly households, exceeded only by middle-aged households in 2017. Seniors financial affairs can also be reliably called stable, as most of them are pensioners.

Specifics of their age also have a significant effect on their habits of purchase, hence, their consumer structure is different to that of younger age groups. It's also important to note that only their main attributes can be 'generalised' reliably, as those of older age groups are usually a heterogeneous segment of the market. We can conclude that purchases related to healthcare are twice the upper average of Hungary for the elderly. The reason is their deteriorating health, a natural consequence of aging. Furthermore, they spend more of their income for lodging upkeep, furniture, and foodstuffs as well (HCSO, 2014). Among those above 60, internet usage is an even less widespread method of spending free time, when compared to countries of the European Union with a higher than average level of livelihood (Győri Szabó, Csizmadia, & Kovács, 2015). Purchasing of seniors have multiple functions. For most of them, it's more than simply satisfying the material necessities, and also has importance as a method of interaction among peers (Kang & Ridgway, 1996).

SOURCE AND METHOD

The selection criteria for observed shopping mall was complex, but the most important factors were long time duration of being an operational shopping centre and impact on shopping culture in the region. The research territory, Örs Vezér Tér, is among of the most famous shopping places in Hungary for decades, especially because of its shopping centres. Sugár Üzletközpont was the first mall opened in this place in 1980. It is one of the oldest shopping centre in Budapest and still exists today. Sugár Üzletközpont was the most Western-style shopping centre in the socialist era of Hungary, so it had a great influence on shopping behaviour of current older generations. This shopping mall can be considered the "twin" of Árkád Budapest. It was built directly next to Sugár Üzletközpont after the change of regime in Hungary. Nowadays, Árkád Budapest has become the dominant shopping centre between two of them (Sikos T., 2018).

The data used for evaluating populace state came from the Hungarian Central Statistical Office and the KEKKH (Central Office of Governance and Electronic Public Services) database. The attitude analysis of those visiting a shopping mall came from a random sampling, on-site questionnaire conducted in 2017. A total of 156 participants answered the questionnaire in the Árkád Budapest[21], whom were sorted into three age groups based on their respective ages. Among the participants, there were 64 young adults (below 30), 43 were middle-aged (30-60), and 49 were elderly (60 and above). The three age groups analysed separately as part of the questionnaire were very distinct in age as the visitors of the shopping mall. Nearly 61% of the young adults (below 30) stated that they are still in education. Nearly all middle-aged were visitors with a job, meaning economically active. Finally, nearly 86% of the elderly (60 and above) were retired. 72% of the participants were from Budapest, and 68% were female. Processing the data from the questionnaire was conducted using the basic toolset of descriptive statistics, since the number of cases in the database made it impossible to conduct multi-variable mathematical statistics methods.

RESEARCH RESULTS

Evaluation of Árkád Budapest's physical location

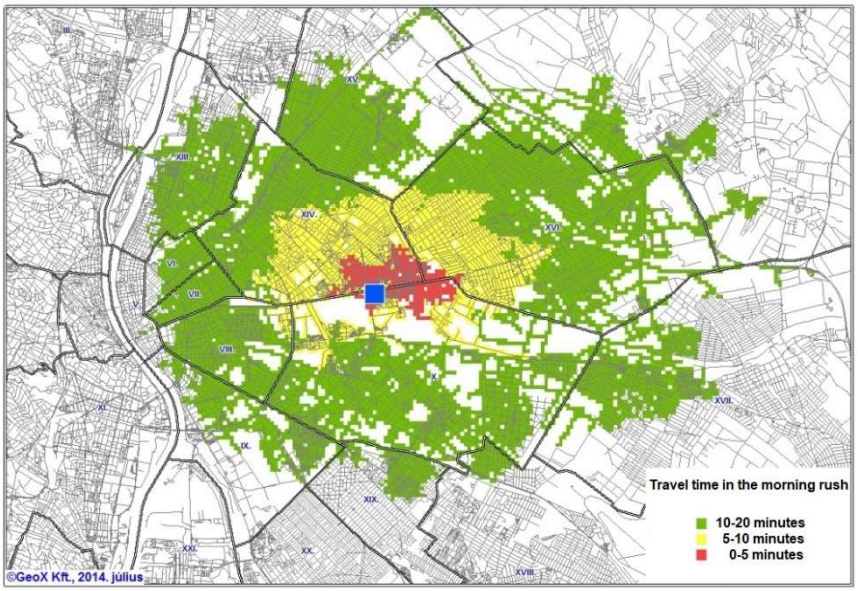
Árkád Budapest opened its gates on 20. March, 2002, in the Örs Vezér Tér, and by today, became one of the most liked shopping mall of Hungary. The shopping mall is on the border

[21] The questionnaire, and the processing of data was done in cooperation with Zsombor Kápolnai Ph.D student, a member of SZIU's Enyedi György Regional Doctoral School.

between Budapest's X. and XIV. Districts, in the old brownfield belt of Budapest. The area of interest Árkád Budapest has is regional, and as such, larger than the 20-minute approach distance. However, according to various questionnaires, it's obvious that most of the participants come from nearby districts.

Its successful operations are highly dependent on the excellent choice of location (see in more detail: Sikos T., 2018). One of the most notable advantages to its physical location is that it's in the commute centre of the capitol. This is where the most used subway line of Budapest (M2) meets the similarly highly populated HÉV coming from Gödöllő (H8). This place also houses multiple destinations of various bus lines coming from the agglomeration and the capitol.

Figure 1 Árkád Budapest's area of interest during morning rush hours



Source: http://www.geoindex.hu/wp-content/uploads/01_reggel-1024x724.png

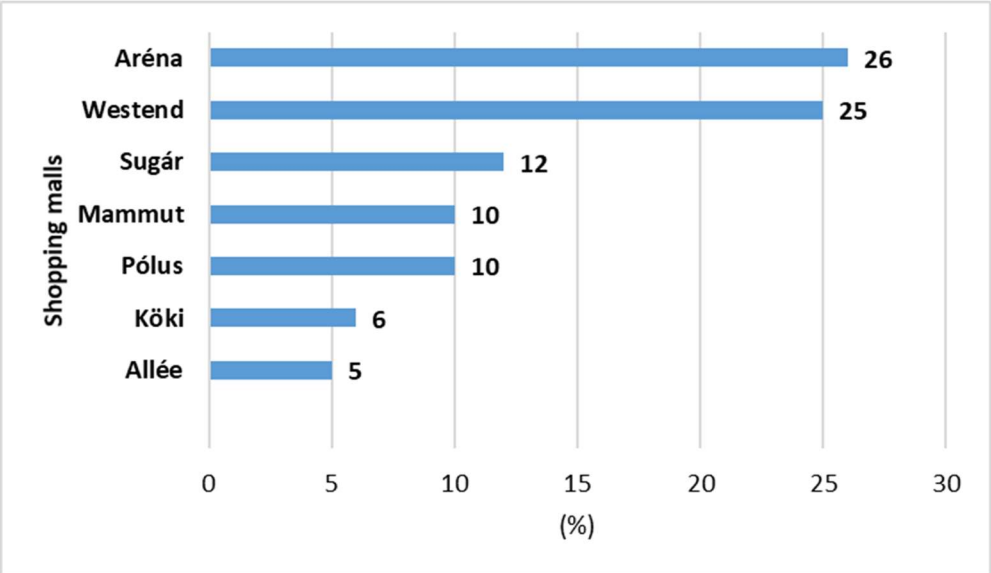
Therefore, the shopping mall's visitors mostly consist of those travelling or changing lines in the area, going to work or school using the same lines. 90% of the young adults below 30 arrived in the shopping mall via public transport. This ratio for the middle-aged group reduced to merely 42%, whereas 53% of the elderly were in a similar situation.

The usage of a personal car was most prevalent for those in their middle-ages, as 42% of the participants from this age group used their own cars to arrive in the shopping mall. Árkád Budapest has a great location from this perspective too, since it can be arrived at from most of the Pest-side districts within 20 minutes, even during morning rush hours (Fig. 1).

Commuting by walking and other means was highest for the elderly (28%). Within the 10-minute range of Árkád Budapest, there are multiple large-scale residential districts. From these, many people, including elderly, arrive in Árkád Budapest. This result is hardly surprising as well, since the effective range of commuting for the elderly is smaller in comparison to that of those in their active ages (Bopp, Der Ananian, & Campbell, 2014).

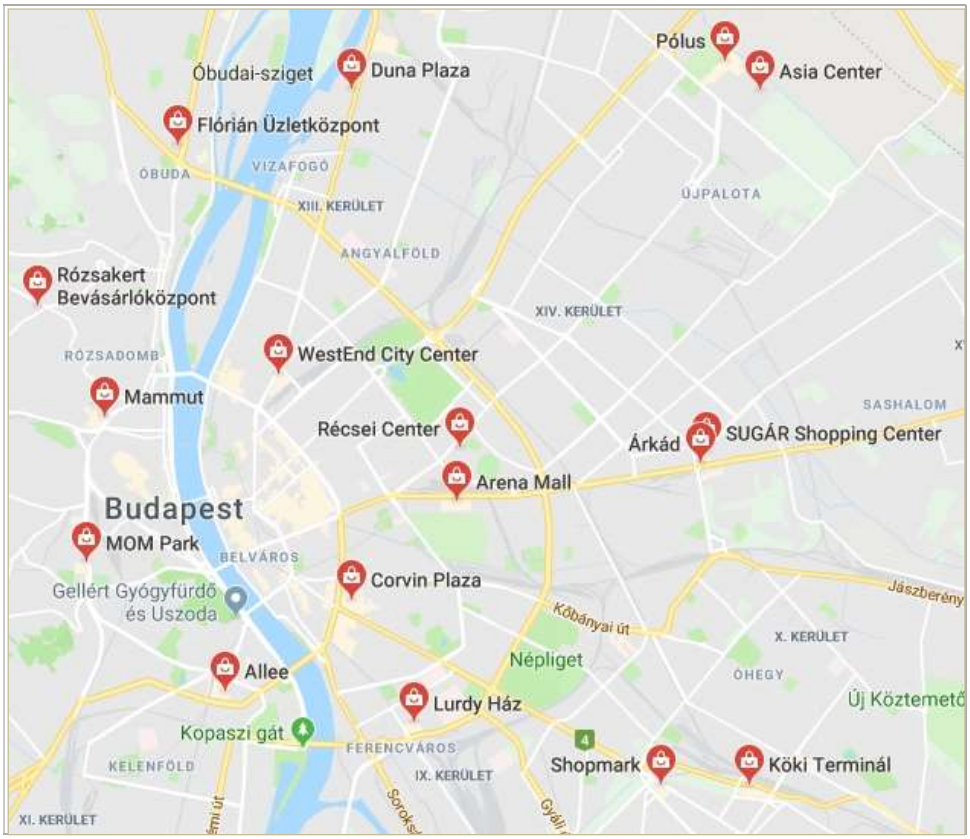
During the analysis of the range of interest, we also have to consider the location of the other shopping malls (Fig. 3) and their own clientele's sizes (Fig. 2). The collected cross-visitation data shows that the most notable competitors are shopping malls similar in size to Árkád Budapest, and those that have a regional sphere of influence. However, we also have to note that the number of shopping malls according to the age groups in question shows significant inconsistencies. This value is 2,39 shopping mall per capita for the younger age groups, 2,16 for the middle-age group, and a significantly lower 1,61 for the elderly.

Figure 2 Clientele of shopping malls, as percentage of total number of answers



Source: own research 2017

Figure 3 Location of the main competitors in 2018



Source: GoogleMap

The main competitors according to the questionnaire were Aréna Mall and WestEnd City Center. However, we also have to consider that among the various age groups, there were once again inconsistencies. Both WestEnd City Center (31%) and Aréna Mall (28%) had higher visitation ratios among those below 30, compared to other age groups. Among the middle-age group's members, Aréna Mall reached up to 26%, whereas WestEnd City Center merely arrived at 18%. And as for the elderly, Aréna Mall (20%) and WestEnd City Center (18%) had similar, albeit the lowest ratings. We should also note the Sugár Business Centre, which is not only neighbouring the Árkád Budapest, but has a direct bridge between the two. This shopping mall got 12% of all answers, finishing in place 3 of shopping malls that got a mention. It's in a specific circumstance, therefore, it's advised to be managed separately during the analysis. It isn't direct competition for Árkád Budapest, since the two trade complexes have a strong cooperation between each other. Their units and services fill in each other’s gaps on the market of capitol shopping malls (Kovács & Sikos T. 2018a). Among the elderly participants, Sugár Business Centre actually got the highest rating (30%).

Age structure of the shopping mall's range

According to the statistical data gathered from HCSO, we can conclude that the population change processes of Budapest are similar to Hungary's own trends. In 2016, the number of those aged above 60 was 469.788, which was 27,68% of the entire population of the capitol. This was higher than the national average. The elderly, be it in numbers or in ratio, have a higher presence within the total populace number.

The capitol's over 60 group isn't significant due to numbers only. Their purchase power is very high as well (Kovács & Sikos T., 2018b). Their most important source of income is their retirement, 38,7% of them have an average of over 150.000 HUF monthly within the capitol. This ratio is only 22,7% nationally, and 15,2% of the retired elderly have a monthly income of 200.000 HUF. This is more than twice of the national average (7,5%) (HCSO, 2016).

According to the official statistical data of the KEKKH, we can conclude that in 2016, a total of 262.314 people were living in the direct area of interest of Árkád Budapest. Within this, the elderly numbered 74.105, which in and of itself could support a smaller shopping mall already. Of the three districts, the XIV. has the eldest populace on average (29,4% are elderly), whereas the XVI. (27,4%) and the X. (25,5%) show a value that's just a bit lower. However, the ratio of elderly was almost the same as that of the capitol itself (27,74%).

The XIV. District has the highest density among all age groups, almost 44% of the total population in the analysis. Furthermore, most of the people in question are within the 10-minute commute range. The X. District with its nearly identical populace (28%) and the XVI. District with yet again, the same number (28%) are quite behind. Therefore, among the districts within the analysis, the XIV. District is the most notable from multiple analysis perspectives.

As it was assumed prior to the analysis, the questionnaire results by living area showed significant differences among the age groups. 61% of the young adults that participated lived in the capitol, whereas this value for the middle-age group reached 76%, and further increased to 84% for the elderly. Nearly 48% of all participants came from the X. XIV. and XVI. Districts, in the reach of the area of interest of Árkád Budapest. The lowest value was similarly for young adults (34%), followed by the middle-age group (54%) and the elderly (61%). Therefore, the effective range of commute for young adults in the sample was larger than that of the middle-age or elderly groups. This is also proven by how 22% of young adults, and 20% of the middle-age group came from a different town of the agglomeration, however, only 14% of the elderly were the same. The visitors that came from the rural areas only made up a notable portion among the young adults (17%).

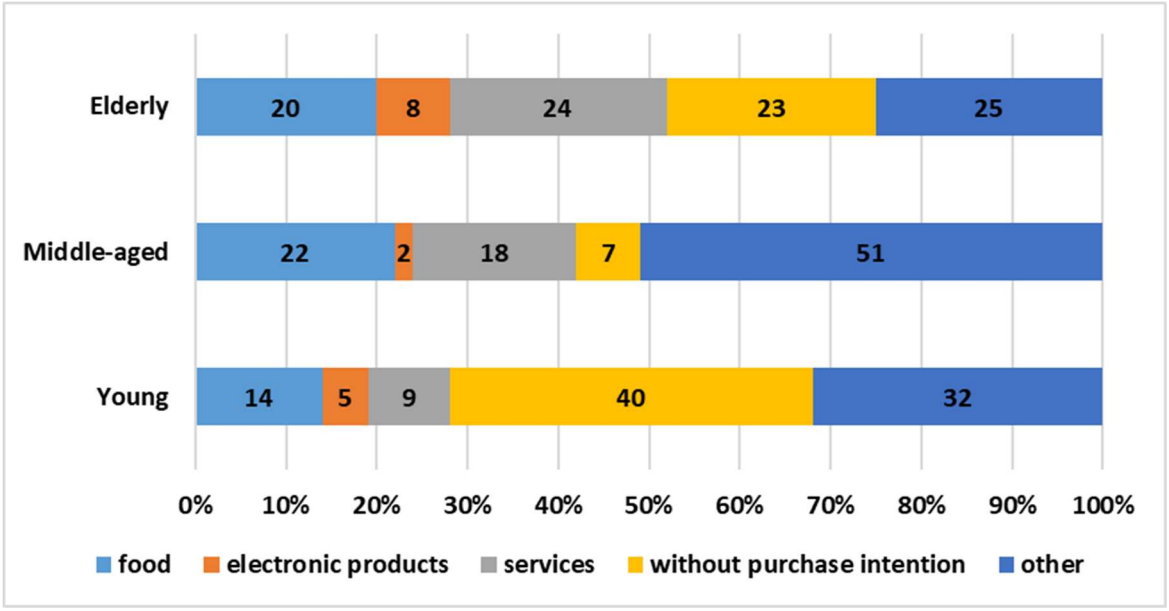
This age structure ambivalence of the area of interest of Árkád Budapest is an excellent attribute in itself. However, it's not easy to satisfy the different needs of different generations simultaneously. This means a notable challenge to the management of the shopping mall.

Analysis of purchase occasions

The goal of analysing purchase occasions is to conduct the comparative analysis of average payouts. For us, internet-based purchases are just as important as those that concluded in the shopping mall, and as such, they are a part of our analysis.

The primary goal of the various age groups when they visit is by no means a negligible point of interest when analysing visitation habits. The reason is that shopping malls can be filled with shops and services that are tailored to the needs of the age groups in question only if these factors are understood. As we could assume in advance, age groups once again produced inconsistencies among each other in this regard. However, these didn't always show up clearly, and weren't completely consistent in significance either (Fig. 4).

Figure 4 Goal of age groups for visiting shopping mall



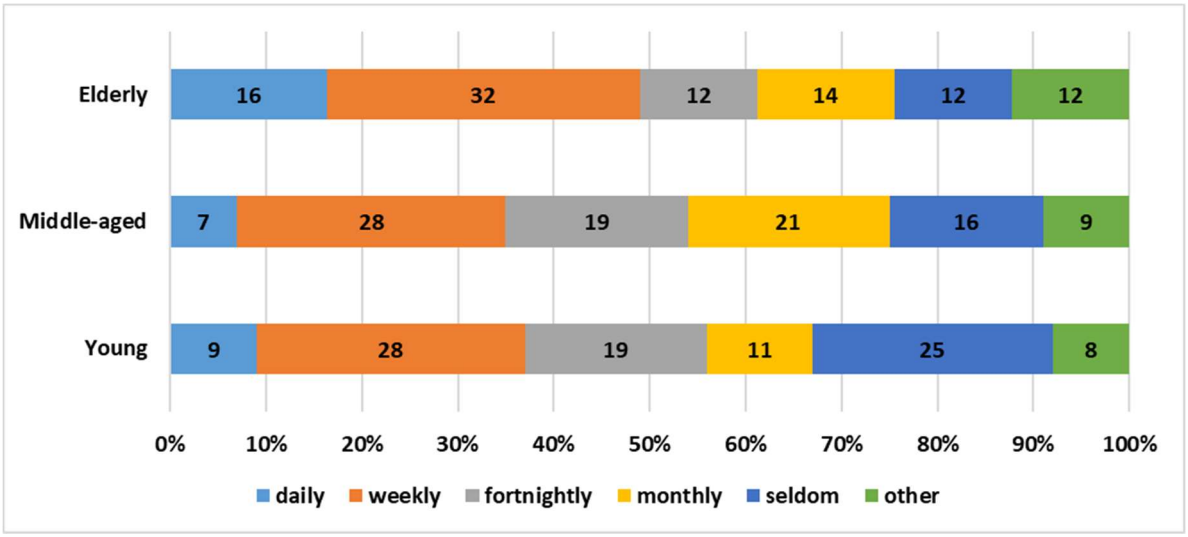
Source: personal research 2017

In the case of the elderly consumers, it's important to note that they had the highest ratio of visiting the shopping mall for a related service. However, the ratio of seniors coming for no particular reason was high as well, albeit quite a lot lower than those of the young adult generation (40%). Their reason for visiting Árkád Budapest was to spend their free time. This ratio can be seen as negligible for the participants in their economically active years (7%). Foodstuffs purchases served as a significant reason for all age groups, but was a comparatively

more important reason for those of the middle-age and elderly groups. Buying electric appliances was highest for elderly group (8%). It's obvious that they're not the ones purchasing the highest number of such appliances, however, younger generations usually buy such items from the internet, or other purchase locations. In the 'other' category, the most frequent reasons were pre-organised meetings or purchase of clothing.

We also compared the frequency of visits (Fig. 5) and the amount of money spent on average during visits (Fig. 6) among the various age groups.

Figure 5 Purchase frequency



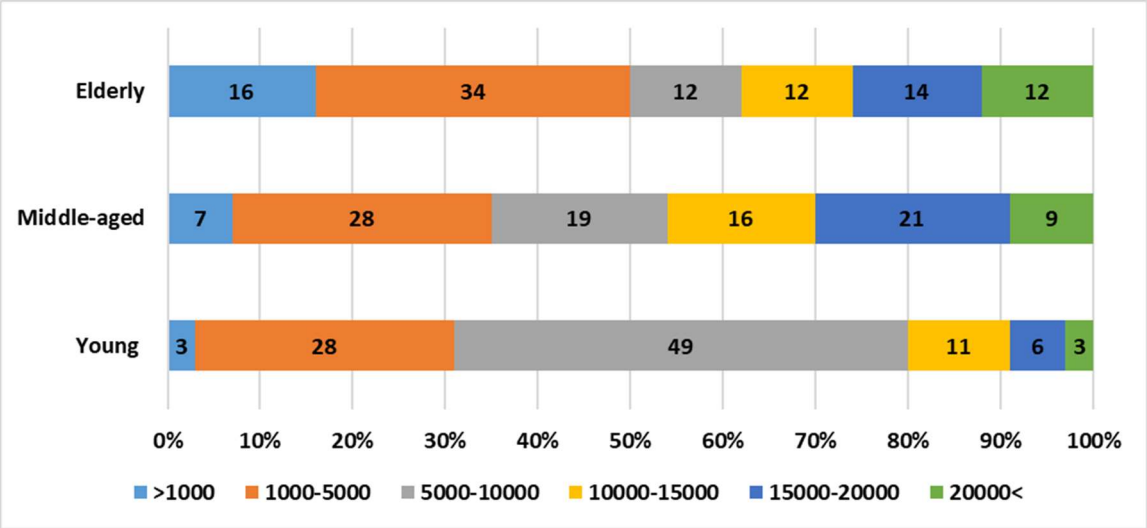
Source: personal research 2017

There were distinct differences between the various age groups from multiple perspectives. On the one hand, among the young adult buyers of Árkád Budapest, there was an extremely high amount of those that visit less than once a month (25%), which is allegedly connected to the high amount of those coming from rural areas. On the other hand, among the elderly consumers, the highest amount of those visiting daily can be observed (16%). This, however, is related to the number of residential areas close by. Furthermore, in the case of the middle-age group, those that visit every two weeks, or every month were the most prevalent, which is understandable due to them usually coming for a set reason, with a pre-determined purchase to make. With their job and family, they have less time to spare as well.

Most of the young adults below 30 were still in education, whereas most of the elderly people above 60 were already retired, and as such, these age groups had a lower potential income compared to the middle-age group. However, the frequency and goal for visiting were also varied for those in their economically active years. About half of the retired spend less than

5.000 HUF every visit. The mid-range values are a relatively small portion (5-20.000 HUF). However, the number of visits with more than 20.000 HUF spent is insignificant. In the case of young adults, the amount spent varies significantly, since nearly half of them spend 5-10.000 HUF a visit, which is the highest among age groups for this category. For the middle-age group, spending above 10.000 HUF is the most frequent.

Figure 6 Average spending by visit (in Hungarian Forint)



Source: personal research, 2017

Nowadays, we can't neglect the internet sales channels either, since the services and the sales achievable using them have a significant effect on shopping malls. In recent years, the time people spent in the shopping mall saw a constant decrease, and in some product groups, the income spent in some actual store locations has been slowly dwindling as well. However, about 90% of sales around the Globe still happens offline, and the two channels are melding together slowly (KPMG, 2018). They become complementary in commerce gradually. In shopping malls, we can see internet-based companies and parcel points more frequently as well.

According to the questionnaire results, among those visiting Árkád Budapest, most purchase using the internet once a month, or even less frequently. However, it's important that the largest group of the elderly buyers (69%) quite simply doesn't use the internet to conduct purchases at all. This counts as a very notable difference compared to the other two age groups (middle-age group: 23%, young adults: 21%). Among those buying via the internet, the middle-age group and the young adult group show no significant difference, since both age groups have a similar ratio of those buying on the internet. However, we can say that the middle-age group does so a bit more frequently. However, those buying on the internet occasionally show no difference to the young adult age group. Yet, our conclusion is that more detailed information can't be

extracted due to the limited number of participants in our sample. Looking at the purchase values, lower, mainly less than 10.000 HUF purchases are most notable for young adults, since nearly two-thirds of their group said they buy in this range per visit. The elderly consumers are the most notable in terms of extreme cases, since they frequently conduct purchases both below 5.000 HUF a visit, and more than 20.000 HUF a visit. On the other hand, the average amount spent a visit for the middle-age group shows a much more balanced outline.

The results on the usage frequency of the e-parcel point show that they were used by only every fifth participant during our data collection. Even they only used it once a month, or not even that frequently. The young adults and the middle-aged used these points more frequently (20% and 21% respectively), whereas using them wasn't prevalent to that level for elderly people (14%). We must note that if we look at the ratios only among those buying on the internet, 25% of young adults and 27% of the middle-aged said that they use the e-parcel point service, but almost half (47%) of the elderly claimed that they use it.

SUMMARY

Árkád Budapest is a shopping mall with a regional area of interest. The clientele is mostly made up of middle-aged people economically active, and young adults still in education. However, the amount of elderly, mainly retired is on the increase as well. These results show similarity to previous researches were conducted in this topic area before.

The sphere of Árkád Budapest's influence is rather wide, so those above 60 years of age can also become a significant group within all visitors. Most of the retired come from the nearby residential areas, and are frequent visitors of the shopping mall. However, they have purchase habits that differ significantly from those of young adults and the middle-aged, from various perspectives. All this results in the fact that shopping malls should dedicate more focus to the elderly in the future.

The results of the empirical research suggested conclusions on the frequency of visits, their goals and the commute ranges which were all consistent with international literature regarding habits of the elderly. It's important to note that using different services had a higher ratio than for younger generations among their reasons for visiting. Results validated that the elderly should be counted as a heterogeneous consumer group from this perspective as well. This was clearly shown by how balanced the answers regarding the reason for visiting the shopping mall were among them. Among the elderly, one notable group is those who visit daily, but spend little. They are mainly retired, and due to their numbers, they should have specific importance.

In a generation comparison, the elderly showed the most notable difference compared to the younger visitors in terms of internet usage.

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SUCCESSFULNESS OF THE HUNGARIAN CITIES IN THE LIGHT OF A BUSINESS MARKET SURVEY

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Abstract

We made a layered questionnaire survey in 2005, in the framework of which we received replies from one thousand entrepreneurs and business leaders to our question relating to the competitiveness of Hungarian towns and cities. This research conducted more than ten years ago sought the answer to the following questions: what aspects do Hungarian businesses prefer when choosing their business location, which Hungarian cities are considered competitive by company leaders and why, which are the cities that the stakeholders see as real economic centres? In the light of the results, we repeated our survey in 2016-2017, allowing thereby the comprehensive evaluation of a period of ten years. In the second phase of data recording we used the method of a layered questionnaire survey again (the three aspects considered were as follows: breakdown of the Hungarian businesses by regions, company size and sectors), in which it was one thousand business managers again who responded to our questions.
The findings clearly demonstrate that the different parts of Hungary are characterised by different endowments and very diverse relative positions.

Keywords: successfulness, factors of business location, economic centre, Hungary

INTRODUCTION

Instead of the competition of regions it is much more appropriate now to talk about competition of cities, and this can even be further narrowed down to the competition of big cities with decision-making centres. Instead of the former determinants, good endowment with basic production factors, location of consumer markets, geographical distance, other factors are appreciated, like qualified human resources, innovation capacity of the population, high quality residential environment, leisure time facilities, quality of the city management, or city marketing. The importance of special local endowments is increasing in acquiring better competitive positions among settlements, conditions of the city competition are much less clear-cut, or predetermined, than they were in the previous decades (Enyedi, 1996).

Features of successful settlements may be quite varied, from flexibly modifiable economic structure through highly qualified labour force and favourable social structure right to the environment of the settlement. Those European regions have become really successful that were able to define and operate a strategy on the basis of their own indigenous endowments. Such a

strategy must always be closely related to the competitive advantages of the local businesses, so first we have to explore the potentially competitive sectors and also collect the factors from which their real competitive advantages can be derived from. Regions incapable of making programmes on their own can only temporarily stabilise their positions, and even that usually happens from the use of some central support, only. The goal of the research was to provide information for the elaboration of such a development strategy based on real local needs.

In our questionnaire we focused on the following issues, using three closed, three open and one semi-closed, so altogether seven questions: what aspects do Hungarian businesses prefer when choosing their business location, which Hungarian cities are considered competitive by company leaders and why, which are the cities that the stakeholders see as real economic centres?

THEORETICAL BACKGROUND

The interpretation of competitiveness during the survey is not restricted to an exclusively economic approach to the concept; it is seen as a broader, more complex issue also involving social and environmental aspects (Alderson, Beckfield & Sprague-Jones, 2010; Camagni, 2009; Lengyel 2006; Lengyel 2012). Expanding the concept of competitiveness, successfulness also seems to be a concept suitable for the comparison of the development levels of regions and cities. In Lengyel's opinion, being successful is a category broader than competitiveness and lasting for a longer duration of time: "…regional competitiveness relates to the economy of the region, the actors of its economy and the closely related social factors, i.e. a category of regional economics, comprehensible in the short and middle run and strongly influenced by market cycles and innovation waves. Success, on the other hand, is a longer term category, also including extra-economic factors like the region's society, environment, settlement stock, geographical position etc." (Lengyel, 2003, p. 290).

In successfulness, the importance of non-quantifiable characteristics in addition to measurable factors is emphasised by Boddy when attributing a special importance to the effective operation of local administration and the level of business services (Boddy, 2002). Under regional institutional system we can mean institutions themselves, the effective system of relationship among them, the quality and efficiency of, and trust in public administration, the so-called social capital. These characteristics will probably not differ much within a country but may very much different across nations, however.

The existence of the following actual factors can make a settlement or a spatial unit successful (Enyedi, 1997; Jensen – Butler 1997; Enyedi, 1998; Cheshire, 1999):

- ability to change the economic structure (with special regard to the spread of sectors with value increasing and multiplier effect),
- high proportion of so-called value increasing sectors in the service industry (presence of high level business and financial services, research and development, higher education, high level cultural services),
- knowledge based production is typical (in connection with the significant consumption of the highly qualified labour, with their above-average demand for a high quality settlement environment, quality of life and services),
- the presence of innovation capacity and research and development is strong (chance of technology transfer),
- successful cities are cities that have power, decisions are made in successful cities, these are the places where corporate and financial centres are concentrated (concentrating thereby highly qualified employees with high incomes in the respective settlements),
- presence of strong and growing middle class (with above-average qualification and income), with favourable urban social structure (paradoxically, in practice this can coincide with significant social polarisation and emerging social conflicts),
- valuable settlement environment, adequate urban policy and provision of high quality public services (related to the non-material needs of the population),
- successful conflict management at a level acceptable for the public opinion, with the intention of preserving the social environment,
- significant external (international) relations, embeddedness in the urban relationship system of an international macro-region (which may be occasional trade relations as well as long-term information and network relations, and the development of external relationships requires background criteria like transport junctions, airline and railway connections or hotel capacities with adequate quality and quantity),
- increasing incomes and employment, as an effect of which significant amounts of develoment sources are raised from locally collected taxes (provided that the centralisation of taxes by the central state budget is not excessive, as in this case gaining the sympathy of the redistributing central power forces the application of totally different methods, separating urban development and the development of the local economy from each other).

In the cases success is not an isolated phenomenon but leads to the birth of successful regions, development axes which will bring the competitiveness of a whole country or group of countries in the long run. It is a fact that the so-called global cities work in a network, and by being active participants in the (goods, financial and economic) decision-making processes of the world economy, their development is affected by intensive external forces. Their economy is basically of service character, while their society is multicultural and strongly layered. By today a clear division line has appeared in the developed countries between cities working inside global networks and cities excluded from these networks (Enyedi, 2012). Examples for researches on the centres managing and controlling global economy are also given by examinations of different authors. (Neal, 2011; Taylor et al. 2011a; Taylor et al. 2011b; Taylor & Csomós2012)

Our analysis aimed also this time at allowing comparability, based primarily on statistical data with other researches. These researches made on the basis of complex surveys (Ambrus et al., 2008; Tóth, 2014), economic and labour market indices (Csomós, 2013; Tóth & Nagy, 2013; Kiss & Szalkai, 2014; Pénzes et al., 2014), on the ground of human resources and innovation (Grosz, 2011; Berkes, (2014) or environmental quality (Schuchmann & Károlyi, 2009; Makra & Sümeghy, 2010).

OBJECTIVES AND METHODS

In phase of data recording we used the method of a layered questionnaire survey (the three aspects considered were as follows: breakdown of the Hungarian businesses by regions, company size and sectors), in which it was one thousand entrepreneurs and business managers who responded to our questions. Taking the current breakdown of enterprises into consideration, more than 40% of respondents were from the region of Central Hungary, while all other regions were represented by an 8-12% proportion of respondents. Our qualitative survey features responses from all counties of Hungary. As regards company size, micro- and small enterprises have an above 96% share in our sample, while the sectoral breakdown is as follows: almost 80% were representatives of the tertiary sector, and agricultural businesses had a 3.5% proportion. Thank to the personal interviews, almost all of the questionnaires filled out proved to be suitable for evaluation.

From the answers given to the first question we wanted to find out how much the location factors that we had collected were important when designating the place of operation. The aspects of our previous research (Koltai 2006; Koltai 2007) were supplemented with two new

factors (demographic and social endowments, the international relations of the settlement), further increasing this way the range of possible answers. We asked respondents to evaluate the twelve aspects of competitiveness below on a five-grade scale:

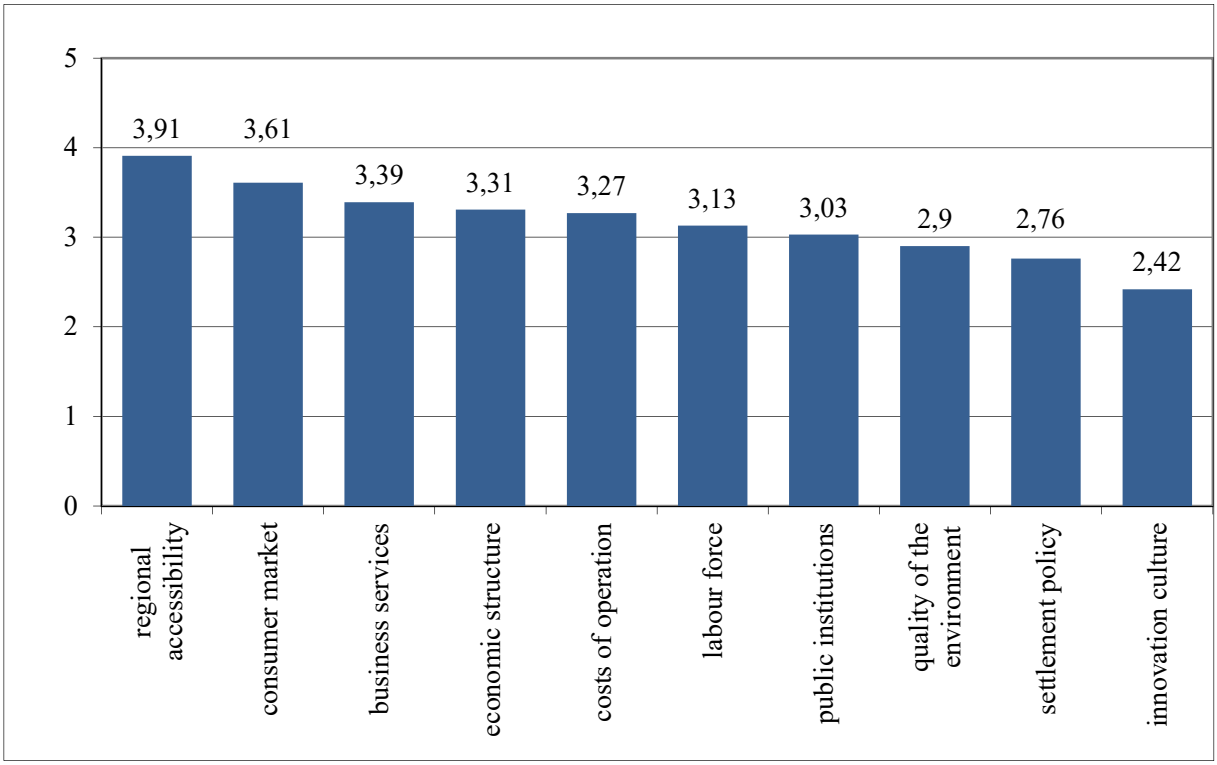
1. economic structure of the settlement (e.g. sectoral breakdown, connected industries, suppliers' connections),
2. innovation culture and intellectual capital potential of the settlement (e.g. research and development capacities, presence of higher education institutions, number of research institutes),
3. regional accessibility relating to the geographical position of the settlement (e.g. transport infrastructure, accessibility of Budapest),
4. costs related to operation (e.g. wages, taxes and tax allowances),
5. activity of the municipality, settlement development policy (e.g. investment policy, city marketing, conflict resolution),
6. quality of the urban environment (e.g. attractiveness of residential place, natural environment, available medical, educational and recreational institutions),
7. supply of public institutions in the settlement (e.g. public services, operation of offices),
8. business services of the settlement (e.g. banking network, industrial parks, operation of business development offices),
9. qualification of labour force (e.g. schooling, language skills, work productivity, data of labour market),
10. the settlement's current or potential status as a consumer market (e.g. consumption potential, spending power, market size),
11. the demographic and social endowments of the settlement (age pyramid, migration processes, density of population),
12. international relations of the settlement (foreign businesses and investments, twin city relations, tourism).

RESULTS AND DISCUSSION

As it can be seen in Figure 1, respondents in 2005 put regional accessibility, the geographical position of the settlement to the first place, which is followed at some distance by being a consumption market. The next group consist of factors considered as medium important ones, including the presence of business services, the economic structure of the settlement, the costs of operation, the professional skills and productivity of labour force, and then come factors such

as availability of public services, endowments of the settlement as a residential place and the settlement policy of the municipality. The lowest values were attributed on the whole to the innovation culture and the intellectual capacities of the settlement on the whole.

Figure 1 Importance of factors of business location, based on the responses of Hungarian businesses surveyed, 2005

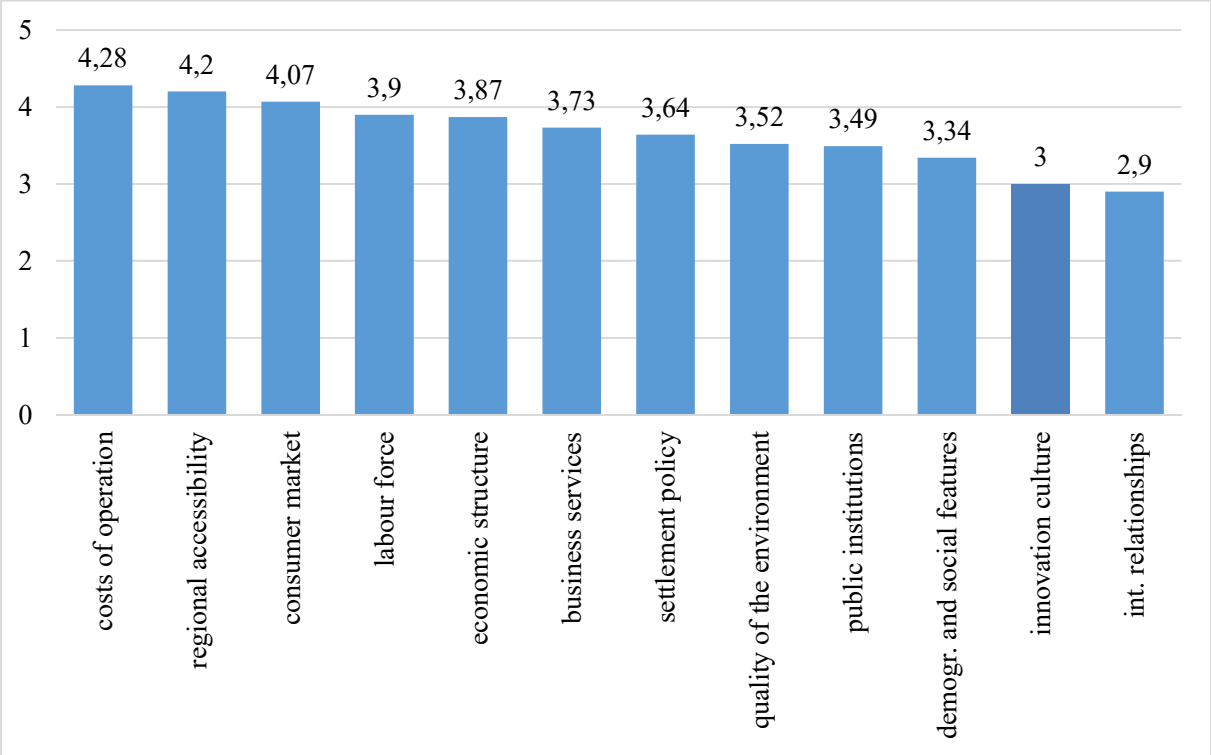


Source: questionnaire survey of the author (2005)

As our first hypothesis we expected the continued primacy of previously highly rated factors (regional accessibility, consumer market character), while we presumed that among the newly introduced aspects it would be the significance of the international relations of settlements that would be important, the latter especially for the middle-sized and large companies.

The findings of our new research show the costs related to operation are in the first place, followed by the regional accessibility and the consumer market character of the settlement (Fig. 2). The next group is led by the competence and efficiency of labour force, before the economic structure of the settlement, business services, the settlement policy of the local municipality, the quality of the environment and the supply of public institutions. Factors rated as the least important still involve innovation culture, and both of our new aspects, i.e. demographic and social endowments, and the international relations of the settlement can be found at the end of the list too.

Figure 2 Importance of factors of business location, based on the responses of Hungarian businesses surveyed, 2016-2017



Source: questionnaire survey of the author (2016-2017)

All of our previous factors, with no exception, were given higher scores. A growth above the average could be seen at explanatory power of the settlement policy of the local municipality, the costs of operation, the competence of the labour force, the innovation culture of the settlement and the quality of the environment. We can state that the Hungarian businesses have become more cost sensitive in the past decade, on the one hand, and the existence or absence of skilled labour has been significantly appreciated for them, on the other hand. These changes are accompanied by the increased significance of the settlement policy activity of the local municipalities, which is visible from micro-businesses to large enterprises. Our first hypothesis was only partially verified, as the costs related to operation unexpectedly got position one in the ranking, also, the international relations of the settlements were rated as less important than we had expected.

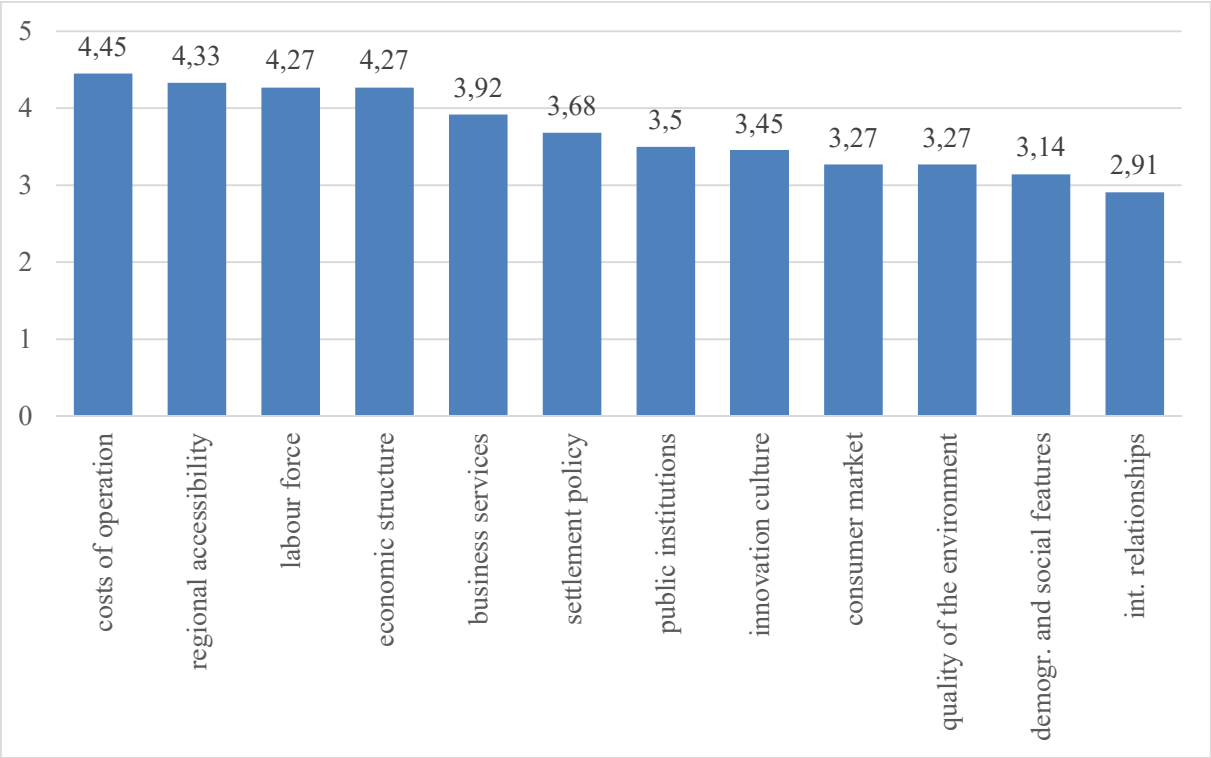
Interesting tendencies are demonstrated by the examination of the scores given to the respective factors by the different size categories of businesses. Our second hypothesis defined was the appreciation of innovation culture by the large businesses, and we also expected that parallel to the increase of the size of the companies, the explanatory power of the consumer market character of the settlement and the quality of its environment would decrease.

In our former research, the most important location factor was regional accessibility, geographical location, irrespective of the size categories. (In 2005 this was ranked first at all size categories of businesses; the highest value was given by large companies: the score was 4.21). This was now amended inasmuch as micro-, small and large enterprises now consider operation-related costs as the most important location factor, whereas in the case of medium-sized enterprises it was the competence of the labour force that was given the highest value, which also was the overall highest value in the survey (4.48). The replies of micro-enterprises, because of their high share in our sample, fully coincided with the responses of the representative sample, and we did not find significant differences in the group of small enterprises (10-49 people), either. (The overall lowest value in the survey – 2.9 – was given by micro-enterprises; they said this was the significance level of the system of international relations.) As opposed to this, there are considerable differences among the responses of medium-sized enterprises (50-249 persons) and even more so of large businesses (above 250 persons). At medium-sized enterprises, as we have already indicated, the competence of the labour force was given the highest score, followed by, appreciated significantly again, the costs relation to operation, regional accessibility and the economic structure of the settlement. An aspect that grew in significance for the medium-sized enterprises is innovation culture, whereas the consumer market character of the settlement is now seen as much less important. Location factors that are seen as least important include demographic and social endowments, and the international relations of the settlement. According to the responses of the large companies, costs of operation evaluated as even more important are followed by regional accessibility and the competence of the labour force, and the economic structure and the innovation potential were also more appreciated by these companies (Fig. 3). In accordance with our expectations, at this level the consumer market character and the quality of the environment of the settlements are now taken as less important, which is an indication of the fact that large businesses typically do no produce for the local market and so the location of the operation is less typically considered as a place of residence but as a place of production by them. Our second hypothesis was then evidently verified.

Our third hypothesis was connected to the sectoral breakdown that was considered as a new factor in the 2016-2017 sampling. We expected that regional accessibility and geographical location, of outstanding significance in our previous survey, would be less important for the respondents from the services sector, whereas the consumer market character of the settlement would be more important for these businesses than for industrial and agricultural companies. We did no expect considerable intersectoral differences at any other factor.

In the case of consumer market character there was indeed some appreciation in the tertiary sector, whereas regional accessibility is not less significant in the field of services than for other businesses. Although the agricultural actors slightly devaluate the significance of business services in a settlement, the majority of the factors do not show sector-specific marks at all. The research findings thus only partially verified our hypothesis.

Figure 3 Importance of factors of business location, based on the responses of large Hungarian businesses surveyed, 2016-2017

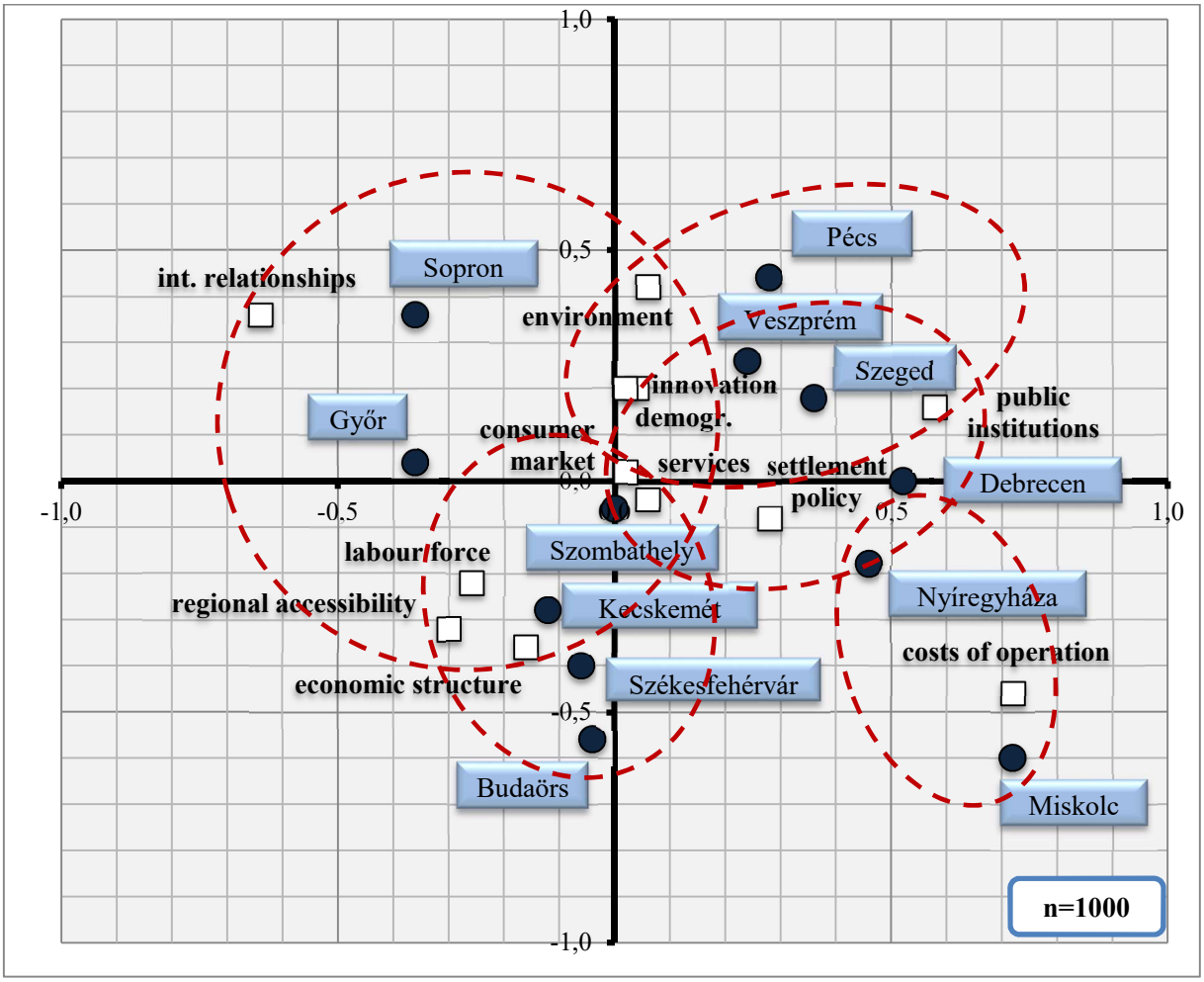


Source: questionnaire survey of the author (2016-2017)

Assessment of the Attraction of Towns and Cities as Business Locations

Useful information was provided by the part of the survey in which we asked businesses what factors they think can be found in the competitiveness of respective settlements. Of course both geographical comparisons (regional opinions vs. national assessments) and the temporal ones (changes experienced since 2005) make it difficult for us to create homogeneous groups of settlements. Nevertheless, we looked at the factors typical for towns given at least 50 mentions (12 towns), to see if the various factors showed any relation to the towns and cities. On the basis of the chi-square test (chi square= 452,37; degree of freedom=121; p-value<0.000) we found a significant correlation between the features manifesting the attraction, and the towns and cities. Figure 4 visually demonstrates the characteristic features of the correlation.

Figure 4 Correspondence map, based on the responses of Hungarian businesses surveyed, 2016-2017



Source: questionnaire survey of the author (2016-2017)

There were six "clusters" that were the most visible:

- Győr can be interpreted as a category on its own, as no other countryside city possesses a similarly wide range of factors as Győr.
- The next group is made by Székesfehérvár, Kecskemét and Budaörs, but Szombathely can also be listed here, due to a partial overlap. The main features of cities in this category are good regional accessibility, a favourable economic structure and skilled labour force.
- The fact that Sopron is featured as a separate category is justified by the fact that this city gives a unique combination of the system of international relationships, highly esteemed urban environment and a significant local consumer market.
- Pécs, Szeged and Veszprém are in the same group primarily due to the quality of their urban environment and their supply of public institutions; the first two cities are also similar to each other as regards their innovation cultures.

- Debrecen and Nyíregyháza approach the former group of cities with their range of public institutions, but in their case this is mostly matched by the active participation of the municipal self-governments (settlement development policy) and favourable operational costs.
- The latter factor, favourable operational costs is a feature of Miskolc, which is actually not coupled with any other location factor.

Hungarian Centres from the Companies' Perspectives

The next question of our research aimed at what settlements are considered by the businesses as real centres of gravity in Hungary. According to our previous findings, Budapest appeared as a centre in all regions of Hungary, what is more, in five of the regions the capital city of Hungary was mentioned most frequently as the centre in 2005. In South Transdanubia, the region that was an exception, where was Pécs was seen as the primary centre of gravity then, while in the North Great Plain Debrecen was indicated in most of the cases.

Our fourth hypothesis is that business leaders see Budapest as the dominant centre in all of the regions, and we also expect the appreciation of the central functions of Győr and Kecskemét.

During our previous research Budapest was seen as the centre of gravity in the region of Central Hungary primarily due to its services, in the second place as a place of procurement and sales of products. Formerly the respondents of this region also listed Székesfehérvár among the cities with considerable attraction, not it was Kecskemét that was mentioned most frequently after Budapest. The central functions of the capital city are also due now to its wide range of business services in the first place, further reinforced by the supply of public institutions, its favourable transport infrastructure, and the consumer market character and its favourable economic structure.

In the region of the South Great Plain Szeged was mentioned more frequently in 2004-2005 among the regional centres than Kecskemét, but the latter was one of the few cities that were qualified as centres also outside their own regions. (Kecskemét was mentioned as a city with central functions in the North Great Plain, Székesfehérvár in Central Hungary and Győr in Middle Transdanubia, as a supplementation to the opinion that says Budapest is the only city in Hungary with attraction reaching beyond its own region.) Currently it is still Budapest that is the number one centre of gravity in the South Great Plain, followed by Kecskemét and Szeged. Both South Great Plain cities are seen as centres due to both their business services, supply of public institutions and their role in the procurement and sales of products.

As revealed from the replies of the businesses in South Transdanubia, the primary centre now is Budapest, and besides Pécs it was Kaposvár that was sometimes mentioned. The central character of Pécs and Kaposvár is due to their wide range of business services in the first place, secondarily to their consumer markets. (In the case of Szeged and Pécs we can rightly miss among the explanations of the central functions the aspect related to innovation culture, research and development capacity, which is an indication of the less dominant role of this factor again.)

In the North Great Plain Budapest is followed by Debrecen and Szolnok. The position of Debrecen among the centres is due primarily to its favourable economic structure and system of suppliers, while Szolnok is in this circle due to its business services. (In the case of Debrecen, factors considered as important in the previous questions, like business services, the range of public institutions or the consumer market character, were now less frequently mentioned.)

In the coming three regions it was not Budapest but cities within the respective regions that were seen as primary centres of gravity. In Middle Transdanubia more businesses consider as the centre Székesfehérvár than Budapest, coming from the business services, the transport infrastructure, the supply of public institutions and the favourable economic structure of Székesfehérvár. Factors of secondary importance included the innovation culture and the consumer market character of this city.

In North Hungary Miskolc was mentioned most frequently, Eger was less often visible in the replies. Miskolc was primarily specified by the businesses of the region as a centre due to its business services, in the second place because of its public institutions, economic structure and transport infrastructure. The explanation in the case of Eger is the supply of public institutions. (For Miskolc the consumer market character mentioned in the regional replies was less emphasised now.)

Finally, in West Transdanubia it was not only Győr but also the other two county centres of the region, Szombathely and Zalaegerszeg that were given more mentions as centre than Budapest. The factors contributing to this are primarily business services, their supply of public institutions and their transport infrastructure. (In the case of Győr, similarly to Szeged and Pécs, the explanatory role of innovation culture and the research and development capacity is less typical.) Our hypothesis was verified, as the centre of gravity character of Budapest can be detected in all of the regions, while Győr and Kecskemét were able to strengthen their central functions primarily within their own regions.

CONCLUSION

It tells a lot that the number one attraction of cities as business locations in Hungary is cost related to operation now. This is followed by factors quite constant over a ten-year period like regional accessibility relating to the geographical position of the city and the city's current or potential status as a consumer market. The lowest values were attributed on the whole to the innovation culture and international relationships of the city on the whole.

According to our expectation, the consumer market character and the quality of environment of the settlements was seen as factors of lesser importance by large businesses, which indicates that at this level, businesses usually no longer produce for the local market, and the location must be less suitable as a place of residence than a business location in the first place. Innovation culture was significantly appreciated in this circle.

In the case of consumer market character there was indeed some appreciation in the tertiary sector, whereas regional accessibility is not less significant in the field of services than for other businesses. Although the agricultural actors slightly devaluate the significance of business services in a settlement, the majority of the factors do not show sector-specific marks at all.

In Hungary there is still very close correlation between the favourable assessment of cities and their positions in the city hierarchy. It is still true that primarily the Hungarian big cities are considered as competitive and successful business locations. The centre of gravity character of Budapest can be detected in all of the regions, while Győr and Kecskemét were able to strengthen their central functions primarily within their own regions.

The goal of measuring success in the territorial sense in my opinion is to assess the position of a given territorial unit as objectively as possible, and on this ground to look at what needs to be done for its development. It is important to realize in what a respective settlement differs from other settlements of similar size and functions, because the competition among towns and cities has many actors of similar endowments, therefore some speciality must be found. If we accept that the goal of competition is to enhance the well-being of the local residents, we can also say that the tool of successful participation in the competition is a special, but flexibly modifiable development programme based on the partnership of and operating in the coordination of local politics, businesses, the civil sector and the academic sphere; a development programme that the local stakeholders know and support as well.

Of course we are aware of the fact that a considerable group of the attractions of the settlements is not exclusively fromed by local decision-makers, and that only longer term programmes can lead to favourable changes in many cases. Nonetheless we think that

responsible development concepts that are specific, maybe concern exact target groups in the settlements and strive for long-term economic success can never neglect personal experiences, and the utilisation of them in a complex regional view.

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A COMPORATIVE ANALYSIS OF THE SOCIO-ECONOMIC DEVELOPMENT OF ROMANIAN CITIES AND TOWNS INHABITED BY ETHNIC HUNGARIANS

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Abstract

The aim of this study is to examine the socio-economic development of all Romanian cities and towns with a Hungarian majority. Socio-economic indicators of these settlements with a strong ethnic Hungarian character were compared to similar other cities of Romania having an ethnic Romanian majority. This research examined the general socio-economic development of these settlements, as well as some components of this socio-economic development through seven complex indicators calculated from 25 indicators (per unit indicators). According to the results, cities and towns with a Hungarian majority are relatively heterogeneous. The major cities of Szeklerland have higher development level than most of the examined Romanian settlement. However, the small sized towns with a Hungarian majority along the western border of Romania have lower values than the similar settlements in their neighborhood with an ethnic Romanian majority or the small and medium sized Hungarian towns of Szeklerland.

Keywords: urban development, Romanian urbanization, Transylvanian urbanization, Hungarian minority, ethnic diversity, ethnic minorities, ethnic development

INTRODUCTION

According to recent censuses, countries neighbouring Hungary are inhabited by altogether 2 million ethnic Hungarians. Out of this 1.2 million live in Romania (INSSE, 2011). The native Hungarian minority communities of Romania can be found almost exclusively in Transylvania (see the Western part of Romania). These communities have formed a minority group in Romanian for a hundred years (INSSE).

The language and the culture of ethnic Hungarians in Romania are significantly different from the majority population. The other unique features of these Hungarian communities are their strong cultural, educational, labour market, and economic linkages to Hungary. All of these distinct features can have effects on how the Romanian settlements with a significant Hungarian population are organising their society and economy, running public institutes, managing development. The appearance of Hungarian inhabitants may contribute to social and cultural diversity of the settlements; and diversity can increase the creativity and economic

prosperity of communities (Alesina & La Ferrara, 2005; Putnam, 2007, Bellini et al., 2013). Therefore, the baseline research question of this study is whether Hungarian minority communities have specific public development patterns comparing to the Romanian majority.

Urban settlements with a Hungarian majority are proper fields to study the potentially distinct social and economic development patterns of the Hungarian communities in Romania. On the one hand, due to the democratically elected decision-making bodies of the Romanian settlements (local self-governing bodies), the management and the development of the Romanian settlements with a Hungarian majority population can be dominated by their local Hungarian communities. On the other hand, the above mentioned possibly different features of the Hungarian communities in Romania should be especially characteristic in the urban settlements having more legal and financial possibility and responsibility for organising public matters than the other settlements. Therefore, the scope of this study is the urban settlements of Romania with a Hungarian majority. This study is aiming to explore the most characteristic social and economic features of these settlements. This study applies a quantitative analysis based on a wide range of statistical data.

LITERATURE REVIEW

Research on relations between ethnicity and economy has evolved in recent decades (Csata, 2015). The correlations between ethnic diversity and economic development are fundamentally determined by the development of democratic institutions (Alesina & La Ferrara, 2005). Deeper democratic culture and more developed economy like in the US (Putnam, 2007) or Western European countries (Bellini et al., 2013) are rather able to host ethnic diversity in a productive way, and reduce its possible negative effects (Collier, 2000). This is different in case of less development countries, e.g. in Africa (Easterly & Levine, 1997; Alesina & La Ferrara, 2005). Besides this, cultural characteristics and social organizational patterns of different minorities living even in the same region can lead to different economic strategies and outcomes (Aldrich & Waldinger, 1990; Light & Gold, 2000). In case of our research we defined diversity at country and regional level, when an ethnic minority (Hungarians) of a country (Romania) can dominate decisions on development of some of its own communities. Therefore, we searched for communities where the ethnic minority community can form a majority during democratic decisions (so not searching for diversity inside the communities). So we examined the cities in Romania having an ethnic Hungarian majority.

Studying minority Hungarians has resulted in numerous scientific works for the past hundred years. Most of the current researches examine minority Hungarians in the fields of ethnography

or ethnic geography (Varga, 1998; Nyárádi, 2003; Balizs & Bajmóczy, 2012), demography (Kapitány, 2013; Veres, 2015; Tátrai, 2017), and educational research (Bartha, 2014; Papp, 2016; Pusztai & Márkus [Ed.], 2017). We have much less knowledge on social and economic conditions of Hungarian communities, although these topics have started to get into the academic and policy focuses recently. The regional differences of entrepreneurial activity of Translyvania has demonstrated that the ethnic composition of villages has no effect on the variance of the number of businesses per 1000 people (Csata, 2012). However, at the level of counties and smaller regions, in some places there are differences that are connected to the varying ethnic composition of the villages (for example, in Mureș [Maros] county). A further analysis shows that in smaller towns in Szeklerland (a region of Transylvania, located in the middle of Romania inhabited mostly by ethnic Hungarians), where the Hungarians form majority, there is a greater entrepreneurial activity (Csata et al., 2011). The general social stratification is that Translyvanian Hungarians are under-represented in the participation of tertiary educations (Veres, 2015), in the class of intellectuals and experts (Veres, 2013) and in better payed and high status occupations (technical, commercial, executive position) (Csata, 2017). All of these features can result in a 14% less average income in the case Hungarians comparing to the Transylvaninan Romanians (Kiss, 2014). So the social features of the Hungarian minority communities reflect in most of the cases less development potential than the majority society. The territorial aspect of the ethnic and socio-economic relations has barely targeted directly in researches. So the question can be raised whether similar week development positions can be explored in the case of ethnic Hungarian regions and settlements as it could be detected in the case of Hungarian minority society.

Besides these, it is worth shortly overviewing the literature dealing with the development of the settlement structure and the urbanisation of Romania (Benedek, 2006; Zamfir et al., 2009; Csák, 2009, 2015; Săgeată, 2010; Mitrică, 2014; Mitrică, Săgeată, & Grigorescu, 2014; Dumitrache et al., 2016). Sandu (2017) has provided probably the most comprehensive multidimensional study on the development at settlement level in Romania lately (defining "LHDI index", the latest version of this index measures the local human development of settlements with 30–30,000 inhabitants). There are also some examples of multidimensional analysis on the development of the western border area (Nagy, 2014) or Moldavian towns (Covasinau & Covasnianu, 2014). Nevertheless, the ethnic pattern as an approach has not really been applied yet in these urban development related studies.

Urbanization and ethnic stratification in Romania

As part of the practical content of the study, it is worth knowing the characteristics of Romania's urban network and its urbanization history, which also has an important dimension of social stratification that correlates with ethnicity and ethnic affiliation. Out of Romania's 13,000

settlements, 320 have urban status, with a total of 12 million people, 54% of the country's total population. Romania is one of the least urbanized countries in the European Union with this rate. Nevertheless, as the balance of the last hundred years (1912-2011), the number of urban populations increased by 9 million and quadrupled in the country (Mitrică, 2014). One of the most significant results of this urbanization process was the change in the ethnic structure of cities, more specifically the urbanization of the Ethnic Romanians (Varga, 1998).

Right after World War (WW) I, the significantly enlarged Romania was still mainly rural, with only 20% of the total population living in 112 towns (Mitrică, 2014; Boia, 2015). Ethnic Romanians did not form a majority in many of the cities, especially not in the newly incorporated Western part of the country (Transylvania). While Romanians formed majority only in some small towns, in larger urban settlements the majority belonged to Hungarians and/or Germans (and Jews) (e.g. in Cluj-Napoca [Kolozsvár], Arad, Oradea [Nagyvárad] or Timișoara [Temesvár]). This partially spatial (related to urban-rural gap) and partially ethnic structure was well reflected also in the data on literacy and occupational structure: the more urbanized minorities had better values (Kiss, 2014).

Between the two WW, strengthening Romanian middle class became an important governmental goal in Romania in parallel with increasing the ethnic Romanian character of the Romanian cities (Brubaker et. al., 2011). In spite of the moderate increase of the urbanization rate in Transylvania, the proportion of Romanian and Hungarian city dwellers became almost equal by the end of the interwar period. After the Second World War, the Communist takeover entailed radical change in the urbanization. As a result of the centrally managed strong industrialization and so-called “systematization”, Romania's urban population increased by 230% between 1948 and 1992, while the country's total population grown only by 44%. The country's urbanization rate rose from 23.4% to 54.3%, while the number of cities increased from 153 to 260 (Varga, 1998). The population of Transylvanian cities has increased by almost 400%, and the number of Romanian city dwellers became 20 times higher at the end of this period. In the meanwhile, the proportion of Hungarians among city dwellers fall back from 38% to 20% (Varga, 1998), while Jewish and German communities had practically collapsed due to the losses of the World War II and emigration (Varga, 1998; Veres, 2015).

The radical socio-economic changes following the collapse of socialism have also given a new direction to urban development. The market economy-based competition among settlements became a leading force behind urbanization. Economic and social changes have led to a strong differentiation of the settlement network and have led to a dramatic change in the spatial structure of cities in Romania, too (Kovács, 2002). Larger cities (especially those which have a geographically advantage by being on the western regions) have become clear winners after the transition period, while small and medium-sized cities, declining industrial centres and

most of the mining towns were unable to adapt to the new economic and social conditions. Deurbanization had become a general phenomenon, in which, besides the welfare suburbanisation, migration began from deindustrialized cities of depressed areas into the villages and rural areas (Benedek, 2006), in parallel with an overall strong decline of Romania's population. The uneven socio-economic territorial development of Central and Eastern European countries after 1990 and joining the EU (Salamin, 2015) can be also experienced in Romania, However, in this country the urban-rural dichotomy remained less sharp than elsewhere in the macro region till the 2000s (Jeney, 2010). These processes were reflected in the population change of cities: except 30 settlements, the population of all towns (larger cities too) were shrinking (1992-2011) (Mitrică, 2014). Policies had a direct effect on the urbanisation after the transition: 60 settlements mostly with only several thousand inhabitants were granted urban status to cope with the declining level of urbanization and the lack of urban areas identified by Law 351/2001. In 2007, the urbanisation level represented the highest value ever recorded in Romania (55.2%); it decreased to 54% by 2011 (Mitrică, 2014). Besides the continuous urban shrinking the most common phenomenon of the urbanization of nowadays Romania is the rapidly developing residential and commercial suburbanization started from 2000s. The process has been characterized by legislative ambiguity and institutional instability, which has indirectly led to an uncontrolled suburban sprawl in case of many Romanian cities (Dumitrache et. al., 2016). With all of these phenomena the urbanization in Romania occur in three different form in the new millennium: with new towns in areas characterized by lack of urban settlements; former rural communes in the proximity of regional poles, and de facto towns in the proximity of regional poles (Csák, 2015). Today, the Romanian urban network consists of 225 small cities (inhabitants<20,000), 75 medium sized cities (20–100,000 inhabitants), and 19 large cities (inhabitants>100,000), and a metropolis (Bucharest). The 320 cities lie spatially unevenly, there significant differences in the level of the urbanization between counties (Mitrică, 2014).

Shrinking of Hungarian urban population continued during this latest transformation of the Romanian city network. A large emigration affected the Hungarian communities especially the urban communities between 1987 and 1991 (Veres, 2015). The proportion of Hungarians decreased, and the remaining majority disappeared in all large cities. There was a similar trend in many of those 20 small and middle-sized cities in which Hungarians still form majority: this majority has become very weak in some of them. Now, more than half of the Transylvanian Hungarians live in villages (Péti et al., 2018), while Romanians has become the most urbanized ethnic group (Kiss, 2014).

DATA AND METHODS

The socio-economic development of cities with Hungarian majority are compared to similar sized cities of Romania, so cities with lower than 60,000 inhabitants are the subjects of the analysis based on data from the 2011 Romanian census. (The population of the most populous city with Hungarian majority is Sfântu Gheorghe [Sepsiszentgyörgy], is 56,000, while the smallest one, also the smallest town in Romania, is Băile Tușnad [Tusnádfürdő] with only 1641 dwellers.) This population category includes 284 towns/cities from 320 settlements of Romania with urban status. In the study, the Hungarian majority cities are those, which the absolute number of ethnic Hungarians exceeded the number of other ethnic groups (basically Romanians) based on the most recent census in Romania and have urban status (*oraș* and *municipiu* are the two categories of urban statuses in Romania). This means, that beside absolute majority cities, there are cities, in which the Hungarians only have relative majority and they technically can be considered as an ethnically mixed settlement.

The aim of this study to measure the current level of development. The development level is a multi-dimensional and multi-indicatoral phenomenon (Nemes Nagy (Ed.), 2005), therefore 25 indicators relevant to socio-economic development were compiled from secondary data in order to measure the socio-economic position of the cities involved. The data were collected from three Romanian data sources.[22] Most of the data are from year 2014, but some of them were taken from the census in 2011. Indicators describing the same scope have been classified into components expressing certain aspects of socio-economic development. A Bennett complex indicator[23] were calculated for each component (with converting values to logarithmic scale in case of some indicators based on practical considerations) (Tab. 1).

Cities have become comparable in each dimension (a dimension is represented by a component), and an overall socio-economic development was also calculated based on all the indicators used in the analysis. Results refer to the general development characteristics of the Romanian cities and towns with a population less than 60.000. The outcomes also focus on the development position of cities and towns with a Hungarian majority inside the aforementioned segment of the Romanian urban network. The development level of some cities with a Hungarian majority in enlarged regions inhabited mostly by Hungarians (see the larger cities in Szeklerland and the western group of the Hungarian urban settlements in Crișana [Partium]) was analysed in a more detailed way comparing the values of these settlements to the values of other cities and towns in their neighbourhood with similar size and with a Romanian majority.[24]

[22] INSSE TEMPO, INSSE eDEMOS, 2011 Romanian census

[23] Bennett's Complex Indicator calculation is based on a special value for the data series (maximum in this case). The calculated percentages ensure the aggregation of data consisting of several different units of measurement.

[24] For the comparison to "larger cities of Szeklerland", these Romanian majority cities are those, which have population between 30,000 and 60,000 and are situated in the neighbouring counties of Szeklerland and for the

Table 1 The list of indicators and component used in the analysis

Component	Indicator
Human resources, demography	1. Population growth rate in the past 3 years per 1000 inhabitants (2014)
	2. Share of active age population (15-64 years) in total population (%) (2014)
	3. Number of college and university graduates per 1000 inhabitants (2011 census)
	4. The ratio of the young population aged 0-14 as a percentage of the active population aged 15–64 (2014 log)
Economic environment, employment	5. Average number of enterprises per 1000 inhabitants in the past 3 years (2014)
	6. Total income (Lei) per employee in the active enterprises (2014)
	7. Unemployment rate (%) – Employed people in the population aged 15-64 per 100 inhabitants (2014)
Living Standards	8. Housing density – Dwelling per person (2014)
	9. Average dwelling size (m^2) (2014)
	10. Number of new dwellings in the past 3 years averaged per 10,000 dwellings (2014 log)
	11. Households with central heating (%) (2011 census)
	12. Households equipped with kitchen (%) (2011 census)
	13. Households equipped with bathroom (%) (2011 census)
Human Infrastructure	14. Number of educators and teachers per 1000 inhabitants in the age group 0-24 (2014)
	15. Number of classrooms per 1000 inhabitants in the age group 0-24 (2014)
	16. Number of hospital beds per 1000 inhabitants (2014)
	17. Number of general practitioners per 1000 inhabitants (2014)
Infrastructure	18. Sewerage (%) (2011 census)
	19. Drinking water supply (%) (2011 census)
	20. Ratio of roads with solid cover (%) (2014)
	21. Green area per inhabitants (m^2) (2014)
Tourism, Culture	22. Number of tourists per 1000 inhabitants (2014 log)
	23. Numbers of night spent per tourist (2014 log)
	24. Number of museum visitors per 1000 inhabitants (2014 log)
	25. Number of visitors to cultural institutions (e.g. theatre, concert) per 1000 inhabitants (2014 log)

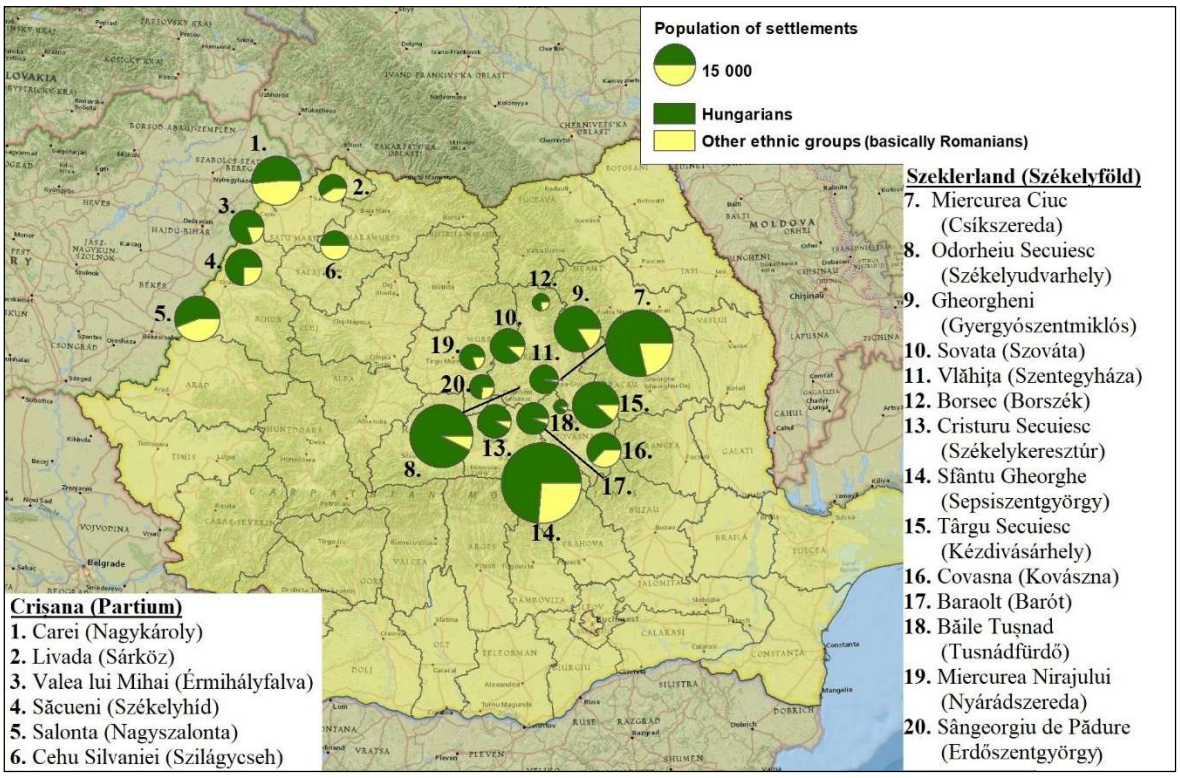
General overview of the 20 Hungarian majority cities

Out of the 631,000 Hungarian urban population of Romania (2011), only 227,000 live in those cities where Hungarians form majority. The Eastern group of the Hungarian urban settlements (14) are situated in the historical Szeklerland (Székelyföld), while the Western group of the Hungarian urban settlements lays in Crișana (Partium) (Fig. 1). Generally, Transylvania's spatial structure of development can be characterized by a dual spatial structure where the counties of South-Transylvania (together with Bihor ([Bihar]) are more developed, and the

comparison to Hungarian majority cities of Crișana (Partium), are those which have population between 5,000 and 20,000 and are situated in Bihor (Bihar), Satu Mare (Szatmár) or Sălaj (Szilágy).

counties which are situated in North-Transylvania are less developed (Benedek, 2016). The Hungarian majority cities, with three exceptions, are situated in the peripheral side of this spatial structure. The largest settlement with a Hungarian majority, Sfântu Gheorghe (Sepsiszentgyörgy) has the highest position in the hierarchy among the 20 cities with a Hungarian majority. Sfântu Gheorghe is considered a regional pole according to the Romanian territorial policy (Conceptul Strategic de Dezvoltare Teritoriala Romania 2030, 2008) with a population of over 50,000. Miercurea Ciuc (Csíkszereda) and Odorheiu Secuiesc (Székelyudvarhely) belong to the category of supra-regional poles, while the remaining seventeen cities with Hungarian majority can be classified only as local poles suitable for serving only the surrounding rural areas. The population of ten cities out of those seventeen do not even exceed 10,000.

Figure 1 Population and ethnic structure of Hungarian majority cities in Romania (2011)



The Hungarian majority cities belong to the small- and medium-sized cities of urban network of Romania. The lowest adaptability to the altering economic environment can be observed at the medium-city level (20–100,000 inhabitants), since many of these cities had developed as a result of forced industrialization during the socialist era, and their economic structure is often one-sided (Benedek, 2006). Small towns (inhabitants<20,000) have the highest representation in the urban network of Romania (70%). Although cities established in the last hundred years have increased the number of small towns, their weight in the urban population reduced: while

the 2/5 of the urban population lived in small towns in 1912, nowadays only 1/8. Still, the role of the small towns is important in the settlement network, linking the cities to the countryside (Zamfir et al., 2009; Csák, 2009). The weight and role of small towns in the network of settlements depend also on their functions (industrial, agro- industrial, agricultural, touristic) and geographical location (located in the centre of a rural area or near a larger city) (Zamfir et al., 2009).

Sfântu Gheorghe (Sepsiszentgyörgy), Miercurea Ciuc (Csíkszereda) and Odorheiu Secuiesc (Székelyudvarhely) belong to the county-seat type of medium-sized cities. These three cities had a significant administrative role even before World War I. Sfântu Gheorghe (Sepsiszentgyörgy) lies in the neighbourhood of Brașov (Brassó) with a population of 250 thousand, which has a great impact on its potential agglomeration area, economic strength and the level of its regional functions. Miercurea Ciuc (Csíkszereda) is a school centre and university town, with strong county-seat function set. Odorheiu Secuiesc (Székelyudvarhely) is not a county seat but fits into a group of typically medium sized smaller weight but significant industrial, commercial and educational centres with county-level functions.

Târgu Secuiesc (Kézdivásárhely), Gheorgheni (Gyergyószentmiklós) and Cristuru Secuiesc (Székelykeresztúr) are multifunctional cities with old traditions and have medium-city role in Szeklerland. All the three cities had strong industrial and commercial functions, and their local role in commerce is still significant (Horváth (Ed.), 2003).

In the category of small towns, the number of towns with touristic functions is significant. The touristic function of Sovata (Szováta) and Băile Tușnad (Tusnádfürdő) is based on spas. Covasna (Kovászna) is one of the most important centres of health and medical tourism. Borsec's (Borszék) touristic (and partly industrial) activities are linked to mineral water and mining. Baraolt (Barót) is a small mining town (lignite), which city category facing serious economic and social problems since the transition (Horváth (Ed.), 2003). Vlăhița (Szentegyháza), Miercurea Nirajului (Nyárádszereda) and Sângeorgiu de Pădure (Erdőszentgyörgy) are considered as regional microcenters inhabited by few thousand people in Szeklerland. The latter two just received their city status at the new millennium.

The region of Crișana (Partium) became target of a more extensive industrialization and urbanization than the aforementioned region, Szeklerland (Mezei, 2009). As a result, the Hungarian majority of the region encompassing this Western group of the Hungarian urban settlements is not so dominant as in the case of Szeklerland, and this Hungarian majority territory is also more scattered. Carei (Nagykároly), the former seat of a county has a significant service and industrial function but had lost the function of an administrative centre, resulting in a very modest increase in population over the past 100 years. Salonta (Nagyszalonta), Săcueni

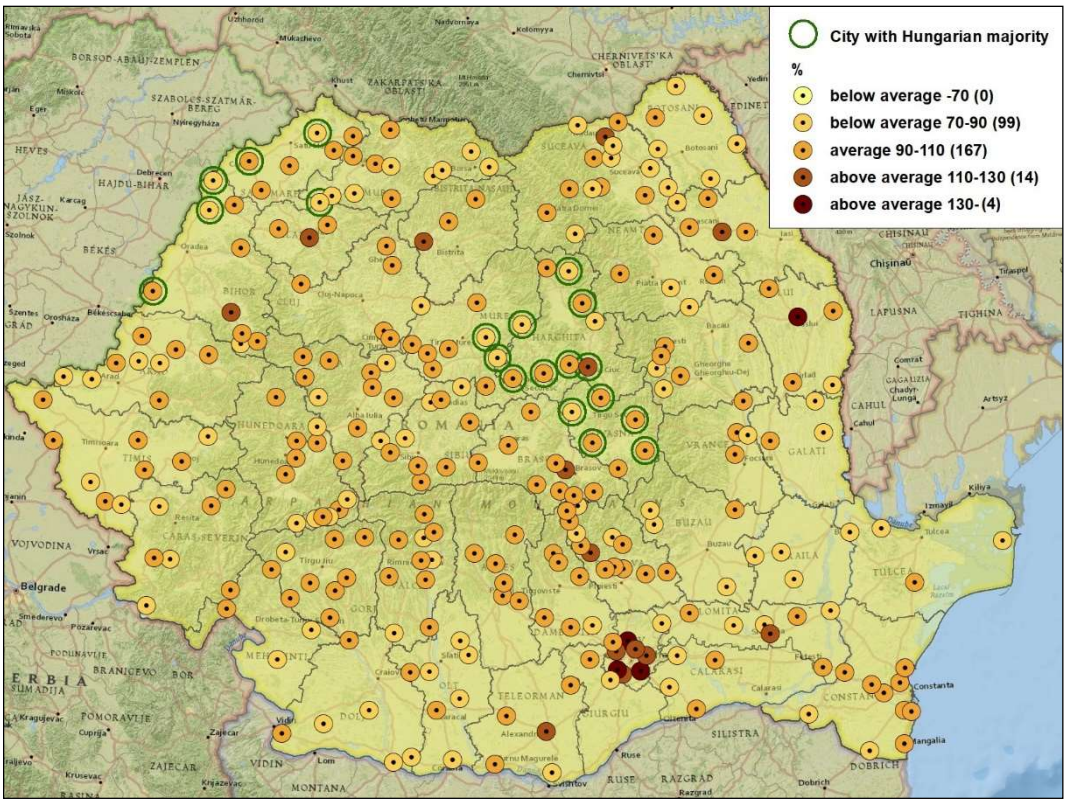
(Székelyhíd), Valea lui Mihai (Érmihályfalva), Livada (Sárköz) and Cehu Silvaniei (Szilágycseh) fall into the category of small towns.

RESULTS

Human resources, demography

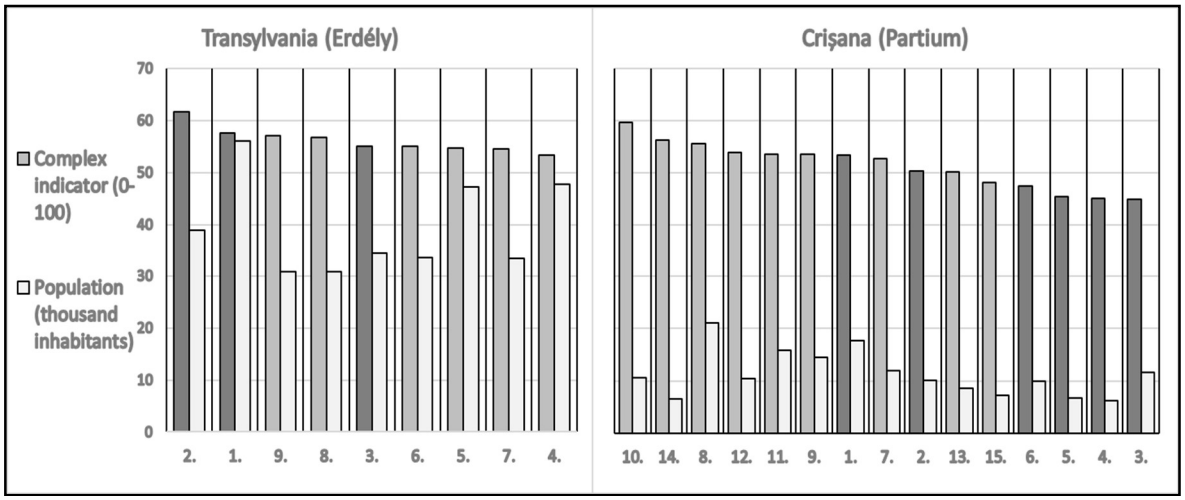
The aim of 'human resources, demography' complex indicator is to express the qualitative and quantitative characteristics of human capital. The values spread between 38.52 and 85.36, the average of the data series is 64.15. The standard deviation of the data series is relatively low; most of the cities have a value close to the average. The difference is mainly due to the rate of population growth and the rate of the graduate population. Cities, which lie in the agglomeration zone of Bucharest (Popești-Leonerdi, Bragadiru, Otopeni), county seats (Zalău [Zilah], Vaslui, Slobozia, Alexandria), some municipiums (Beiuș [Belényes], Câmpina] and even small towns (Beclean [Bethlen], Ghimbav [Vidombák]) have higher complex indicator than the average in the city category due to the high or outstanding value of aforementioned two indicators separately or together (Fig. 2).

Figure 2 Human resource, demographic complex indicators of the 284 cities as a percentage of the average (2014)



Among the Hungarian majority cities, only Miercurea Ciuc (Csíkszereda) belongs to this outstanding category. The cities with Hungarian majority are in rather disadvantageous position within the component: 45% of these cities have values lower than the average, while this proportion is only about 33% in case of the cities with Romanian majority. 50% of the Hungarian majority cities are on the average, while this rate is higher (60%) in the case of cities with a Romanian majority. The most important drivers behind the low indicator values of the Hungarian settlements are the low rate of graduates, the negative population growth rate, and the disadvantageous age structure of Hungarian majority cities. In regional context, Miercurea Ciuc (Csíkszereda) in Szeklerland has outstanding values comparing to its neighbouring cities with Romanian majority, not like in the case of the Western group, in Crișana (Partium) where cities having lower complex indicator values are the ones with a Hungarian majority (Fig. 3). The key component behind these results is the high and low rate of graduates in each region.

Figure 3 Human resource, demographic complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)



Transylvania (Erdély): ***1. Sfântu Gheorghe (Sepsiszentgyörgy), 2. Miercurea Ciuc (Csíkszereda), 3. Odorheiu Secuiesc (Székelyudvarhely)****, 4. Turda (Torda), 5. Mediaș (Medgyes), 6. Dej (Dés), 7. Reghin (Szászrégen), 8. Săcele (Négyfalu), 9. Făgăraș (Fogaras)*

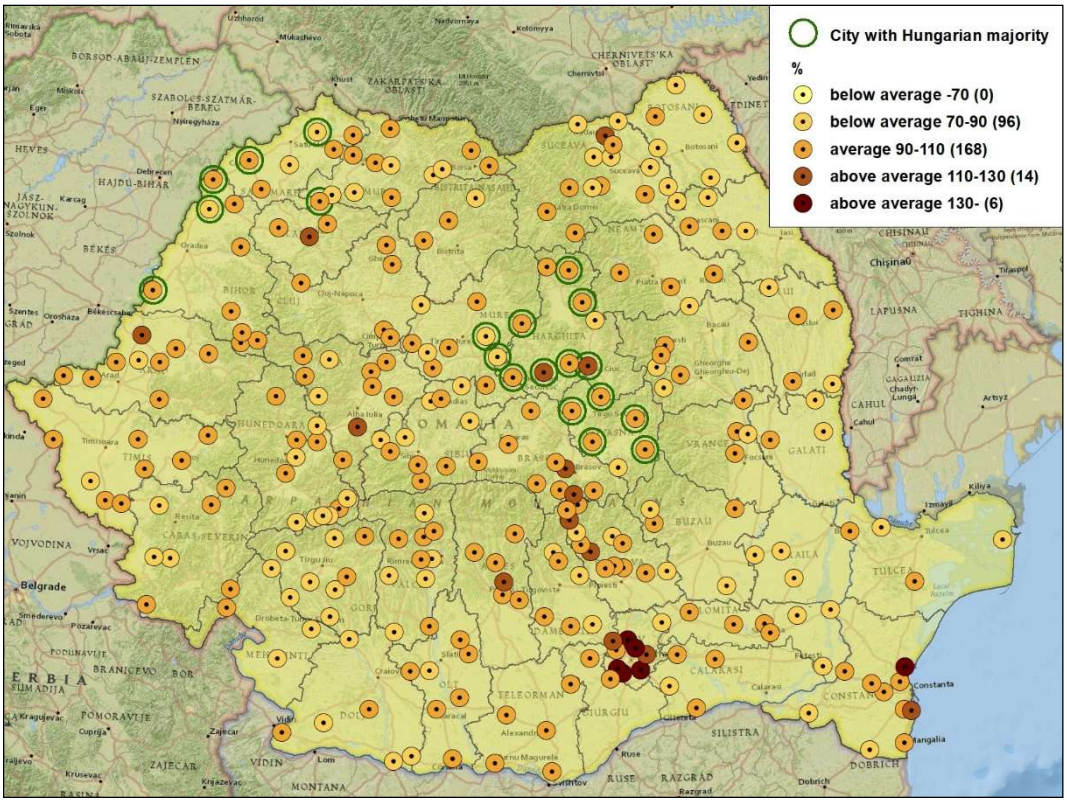
Crișana (Partium)*: 1.* ***Carei (Nagykároly), 2. Salonta (Nagyszalonta), 3. Săcueni (Székelyhíd), 4. Valea lui Mihai (Érmihályfalva), 5. Cehu Silvaniei (Szilágycseh), 6. Livada (Sárköz), 7.*** *Marghita (Margitta), 8. Șimleu Silvaniei (Szilágysomlyó), 9. Negrești-Oaș (Avasfelsőfalu), 10. Beiuș (Belényes), 11. Jibou (Zsibó), 12. Aleșd (Élesd), 13. Tășnad (Tasnád), 14. Ștei (Vaskohsziklás), 15. Ardud (Erdőd)*

Economic environment, employment

The 'economic environment, employment' complex indicator is to describe the performance of local economy and the employment opportunities. The values spread between 32.89 and 73.67, the average of the data series is 44.38. The differences in this component are not high in case of the most elements, the values of most cities are similar to the average or situated slightly below. The outstanding values of cities in the agglomeration of the capital can be explained by

high entrepreneur density and employment. There are other settlements with high complex indicator values where there is a major employer (e.g. oil refinery in Năvodari or Dacia factory in Mioveni) (Fig. 4).

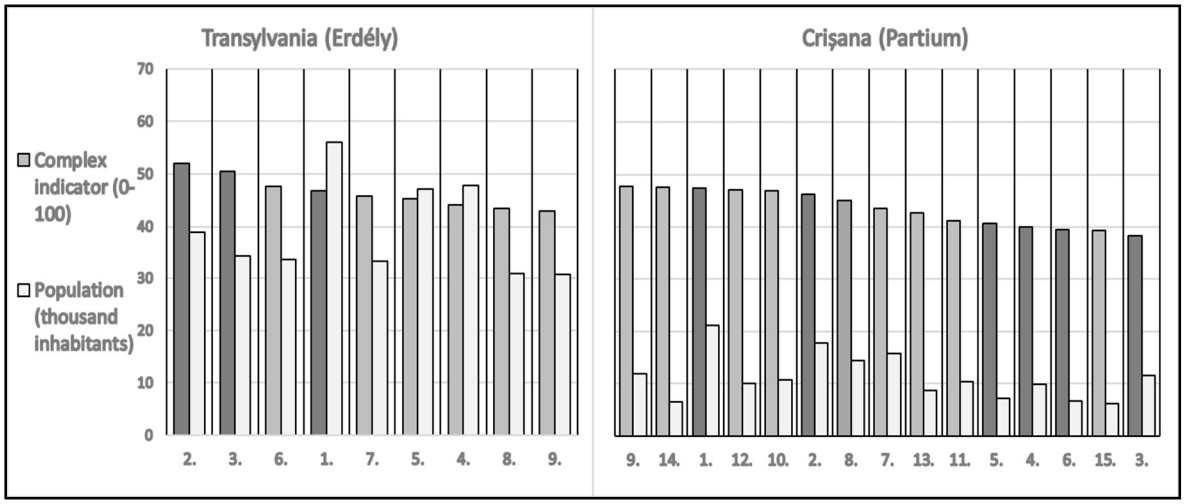
Figure 4 Economic environment, employment complex indicators of the 284 cities as a percentage of the average (2014)



Cities with Hungarian majority can be estimated to have more advantageous positions than those of having Romanian majority. Only 20% of them have value below average compared to the Romanian majority cities (35%). 70% of the Hungarian cities (14 cities) have values around the average, and two of these cities (10%) have complex indicator value above the average, while in the case of Romanian majority cities these values are only 58% and 7%. Miercurea Ciuc (Csíkszereda) and Odorheiu Secuiesc (Székelyudvarhely) are the two Hungarian cities with the highest complex indicators. They also have higher indicator values than the similar-sized Romanian majority cities in their neighbourhood. The main reason behind this is the higher entrepreneurial activity of the Hungarian majority cities (while their income per employee values are lower). In the case of the Western group of the Hungarian urban settlements the economic indicator of Carei (Nagykároly) and Salonta (Nagyszalonta) can be considered similar to the neighbouring same sized settlements with a Romanian majority. Other towns with a Hungarian majority in this group have lower values than almost all of their

neighbours (Fig. 5). The main reason for this is the low entrepreneurial activity compared to the regional level.

Figure 5 Economic environment, employment complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)



(See the numbers for each city in Figure 3)

Human Infrastructure

The 'human infrastructure' component aims to measure the accessibility and quality of public and human public services, education and health care available to urban populations. The component is also an indicator of the central functions possessed by a city, as the examined public services are usually available beyond the boundaries of a given settlement. The values spread between 14.21 and 74.69, the average of the data series is 33.18. Obviously, not every settlement can have a hospital, special medical facility, or a major educational institution, so the elements are spread over a wide range compared to the average (Fig. 6). In most cases, the small urban settlements with significant regional educational level (Beiuș [Belényes], Horezu) or a hospital/health care institution (e.g. Nucet [Diófás], Covasna [Kovászna]) have the highest values. The lowest values can be found in cities where the educational or healthcare capacities are relatively weaker, and/or the general practitioner system is overloaded (e.g. Borșa, Mizil). Low indicator values can be resulted also by the vicinity of a large city or being a member of a conurbation (e.g. Petroșani basin) (Fig. 6).

Hungarian majority cities have the most advantageous positions in the case of this component. Only 10% of them have values below average compared to 42% of the Romanian majority cities. 55% of Hungarian majority cities are among the above-average cities, while only 31% of the Romanian majority group. These good positions are mainly due to the good quantitative and qualitative conditions of their educational institution. On a regional scale,

Miercurea Ciuc (Csíkszereda) and Odorheiu Secuiesc (Székelyudvarhely) have outstanding high values compared to the six Romanian majority cities. (It is worth mentioning also Cristuru Secuiesc (Székelykeresztúr), which has the highest indicator of the Hungarian majority cities.) This complex indicator values in case of the western group of the Hungarian urban settlements are mostly similar to their Romanian majority neighbours (Fig. 7).

Figure 6 Human infrastructure complex indicators of the 284 cities as a percentage of the average (2014)

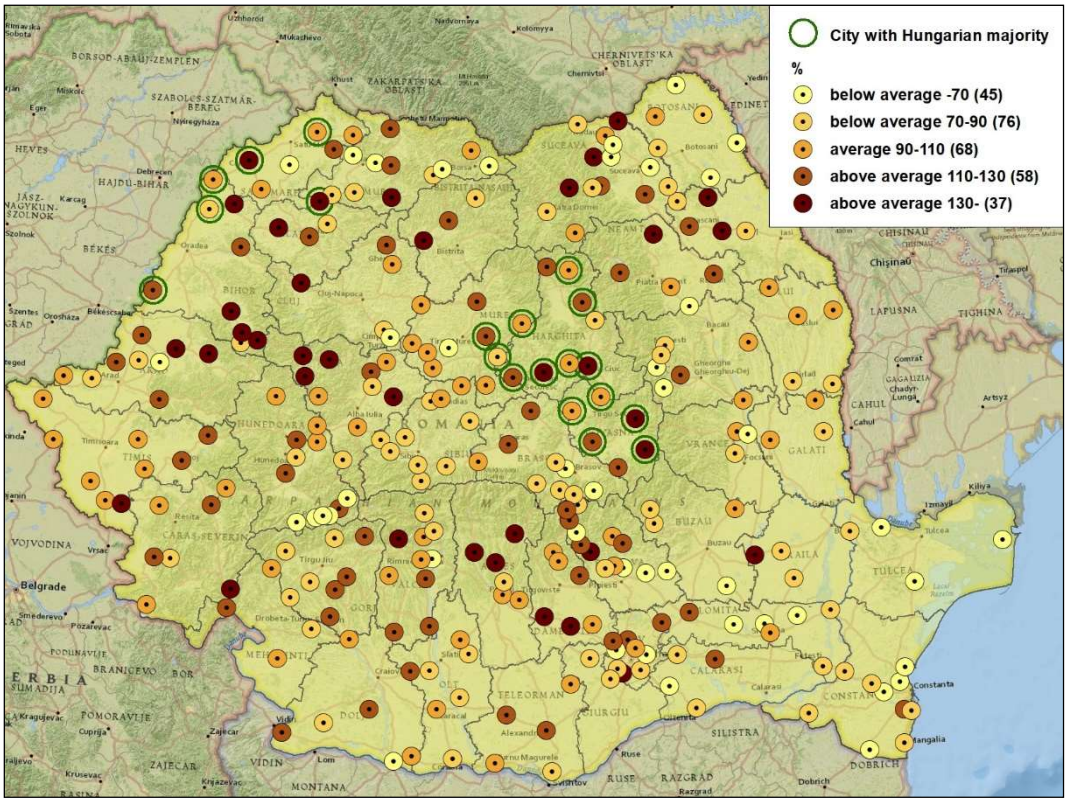
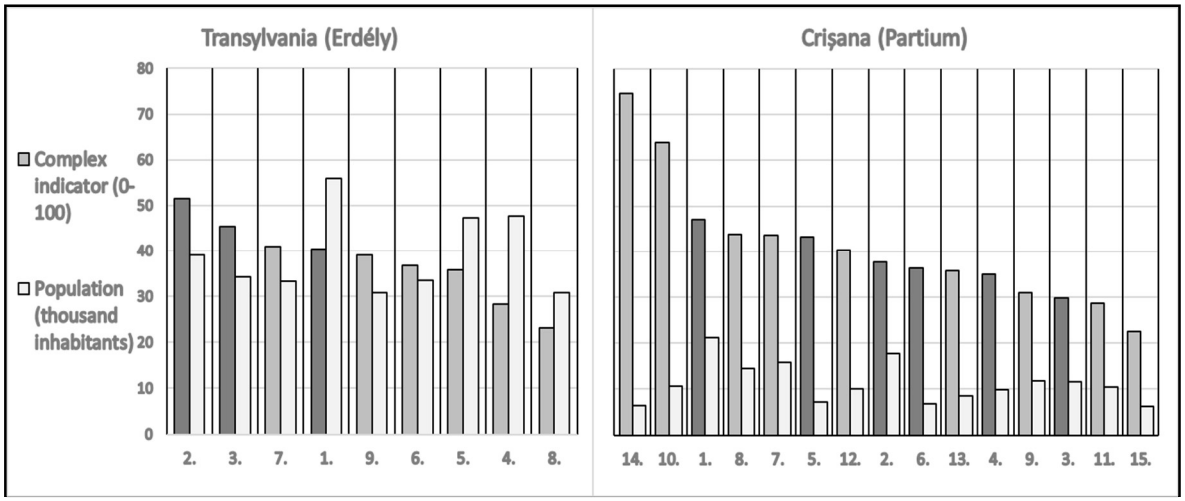


Figure 7 Human infrastructure complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)

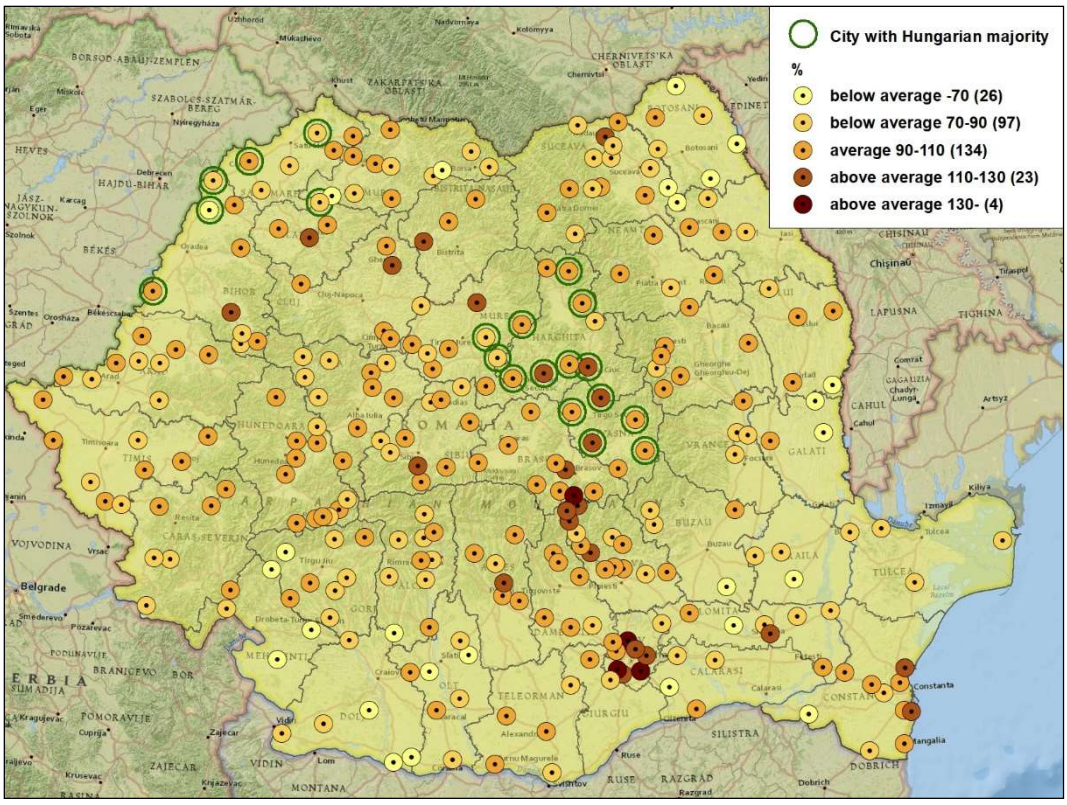


(See the numbers for each city in Figure 3 on page 10)

Living standards

'Living standards' are described by indicators representing housing stock and comfort level of households. The values spread between 34.33 and 89.16, the average of the data series is 64.15. In this case, the standard deviation is also high, primarily due to the comfort level of households. Almost exclusively only small urban settlements can be found below the average. Except for a few cases, the lowest indicators are typical for non-Transylvanian small towns. High values occurs at towns in agglomerations (Bucharest, Brașov [Brassó], Constanța) as well as at some municipiums (Zalău [Zilah], Gherla [Szamosújvár]], and popular towns, touristic destinations (Sinaia, Băile Tușnad [Tusnádfürdő]) (Fig. 8).

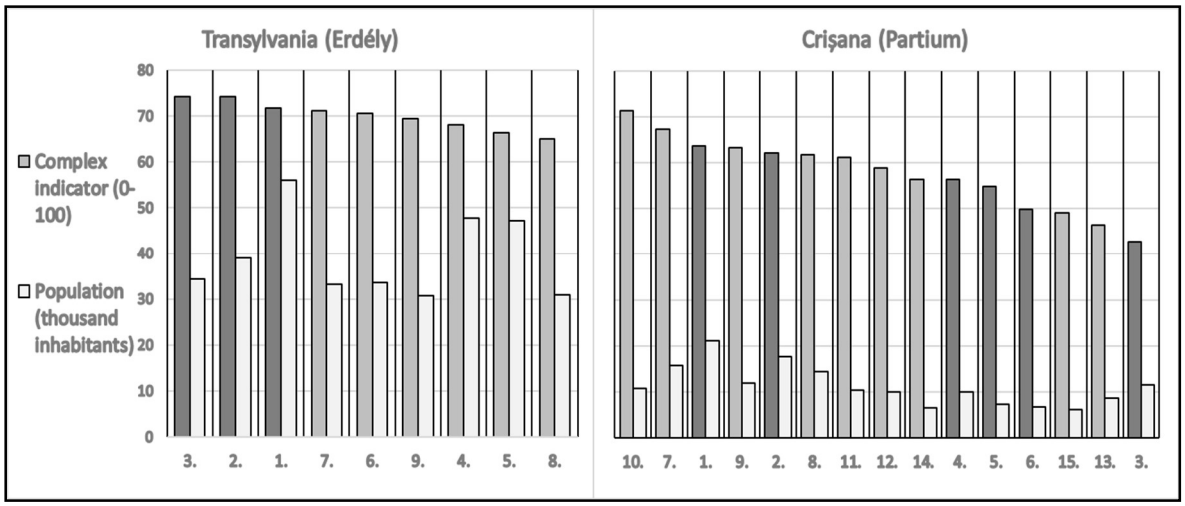
Figure 8 Living standards complex indicators of the 284 cities as a percentage of the average (2014)



The 'living standards' of the Hungarian majority cities are better than the Romanian majority cities. 30% of the Hungarian majority cities are below the average, 20% of them are above the average (these values are 44% and 9% in the case of the Romanian majority cities). In Transylvania, the larger urban settlements of Szeklerland are in leading positions among the other medium-sized cities of the encompassing region. They have great advantages in the comfort level of households especially. In Crișana (Partium), towns with a majority of

Hungarian population have lower values than their neighbours with Romaninan majority except Carei (Nagykároly) and Salonta (Nagyszalonta) (Fig. 9). The value of this complex indicator at Săcueni (Székelyhíd) is particularly low even on the national level.

Figure 9 Living standards complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)



(See the numbers for each city in Figure 3.)

Infrastructure

The 'infrastructure' component measures the level and quality of public infrastructure and communal services. The values of the complex indicator are distributed between 21.25 and 89.97, the average of the data series is 66.80. There are significant differences between cities in terms of all infrastructure indicators. The cities with the highest scores show a heterogeneous picture by their size and function, but they are consisting of mostly Transylvanian cities, while the cities significantly lagging behind are almost exclusively outside of Transylvania (Fig. 10).

The Hungarian majority cities seem to have a bit advantageous level of development within the small and medium city network (inhabitants<60,000) in case of this component, too. Only 20% of them are below the average, while in the case of Romanian majority cities this value is 40%. 30% of them are above the average, which is few percent higher than in the case of the Romanian majority cities. However, there are basically negligible differences between the Hungarian and Romanian majority elements in Szeklerland and its neighbourhood counties. (Here, the small Băile Tușnad (Tusnádfürdő) is in a leading position among the Hungarian majority cities.) Most of the Hungarian majority towns near the Western border are situated in the middle section in the order of development of infrastructure level. However, Livada

(Sárköz) and mainly Săcueni (Székelyhíd) are far behind the average development level of the small towns of the region (Fig. 11).

Figure 10 Infrastructure complex indicators of the 284 cities as a percentage of the average (2014)

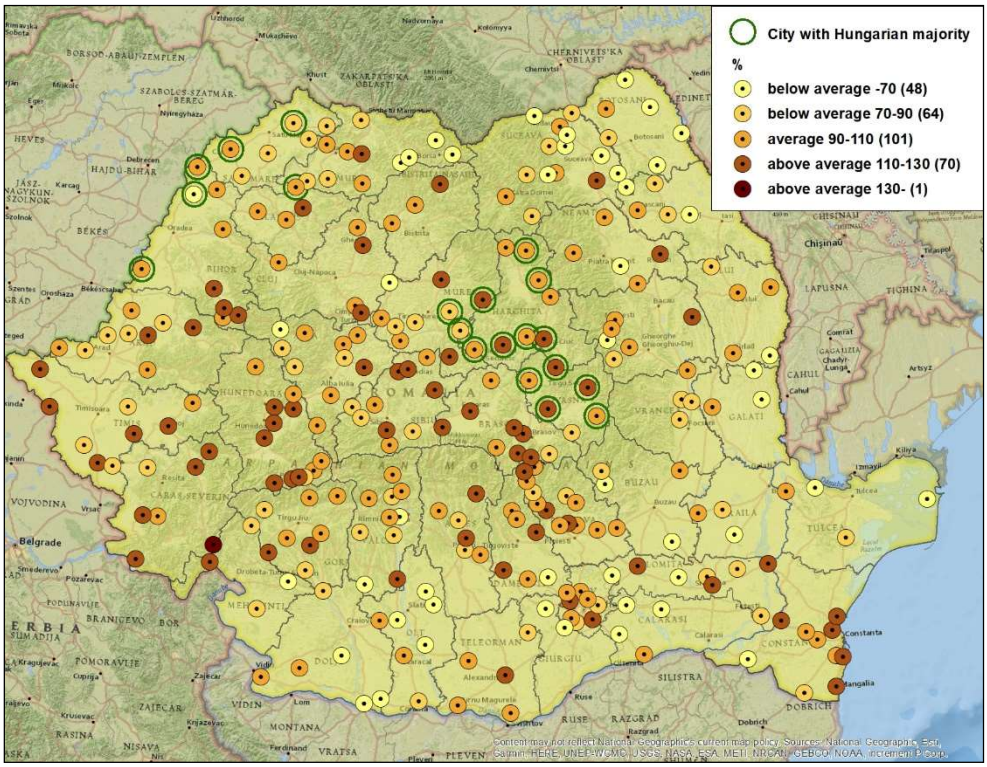
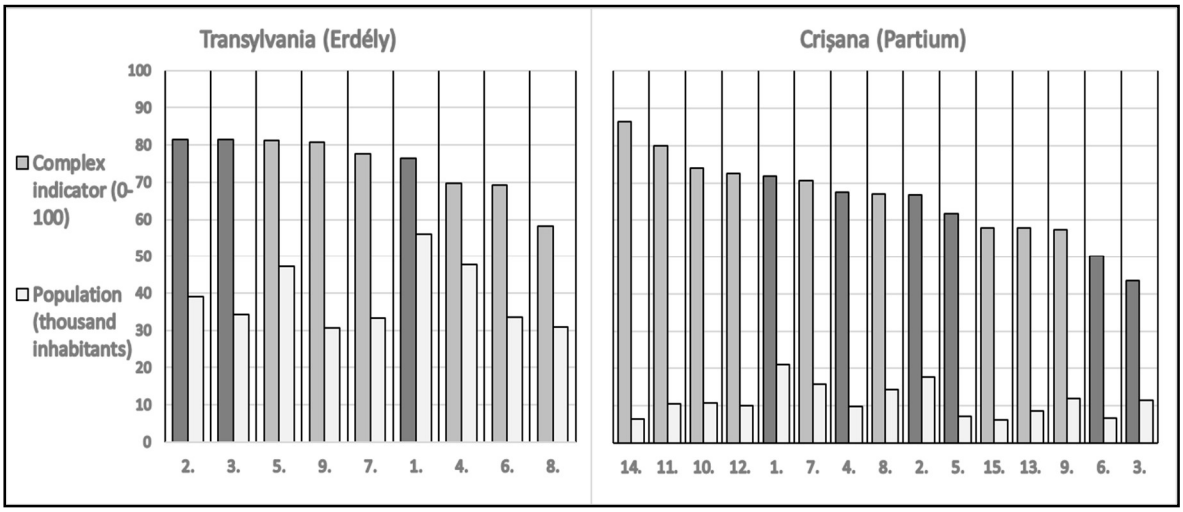


Figure 11 Infrastructure complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)

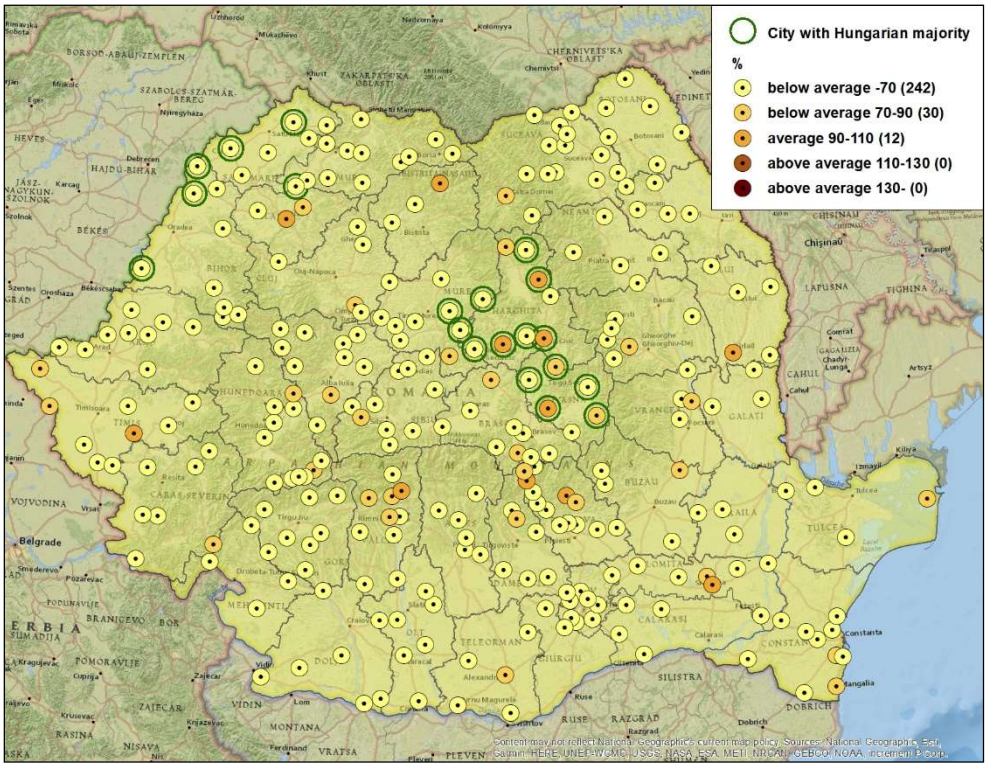


(See the numbers for each city in Figure 3.)

Tourism, culture

This component is to measure the role of cities in tourism and organising cultural life. It focuses on the existence of outstanding touristic and cultural functions at regional or national level. Nearly half of the cities involved into the analysis have only minimal tourism, still the average value is 57.90 (due to indicators used in the calculation). The vast majority of the 284 cities are lagging far behind from this average value, and there are only a few cities that have high or non-zero values for all indicators used in the component. As a result, there are no cities with an indeed outstanding value compared to the average. The highest indicators are obviously in the case of small towns with touristic and cultural functions (e.g Buziaș [Buziásfürdő], Sinaia) as well as municipium with central functions (e.g. Slobozia, Zalău [Zilah]) (Fig. 12).

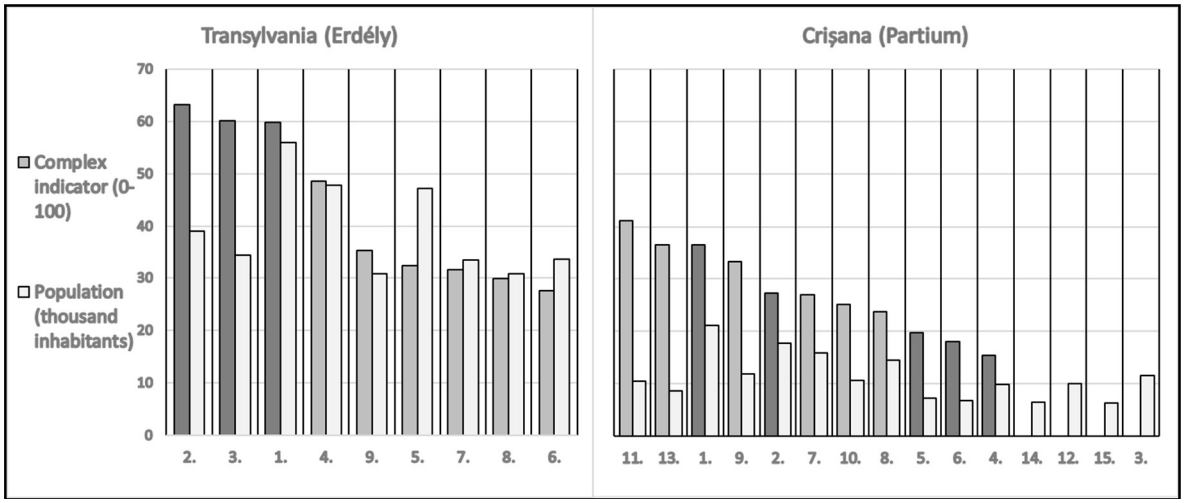
Figure 12 Tourism, culture complex indicators of the 284 cities as a percentage of the average (2014)



The medium-sized Hungarian majority cities are clearly overrepresented in this group. Out of the 12 cities with the highest score, four are the most populous Hungarian majority cities of Szeklerland. In addition to the relatively significant amount of tourism associated with these cities, a sound cultural consumption (theatres, concerts) – which otherwise would be more typical in really large cities – is also can be observed in these Hungarian cities. The latter case is probably due to the absence of a large city in the counties of these Hungarian cities (as in the

case of Vaslui and Ialomița counties). It can also be due to the unique cultural role of these Hungarian cities organising the cultural life of the Hungarian speaking communities throughout Romania. Not surprisingly, these cities have higher indicator values than the medium-sized Romanian majority cities, which are situated in the closer neighbourhood of large cities with cultural institutions. In some cases of the small towns of Crișana (Partium), there are settlements with no tourism in the case of both ethnic city groups. However, where tourism is statistically presented, the Hungarian majority cities belong to the set of less visited settlements except Carei (Nagykároly) and Salonta (Nagyszalonta) (Fig. 13).

Figure 13 Tourism, culture complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)

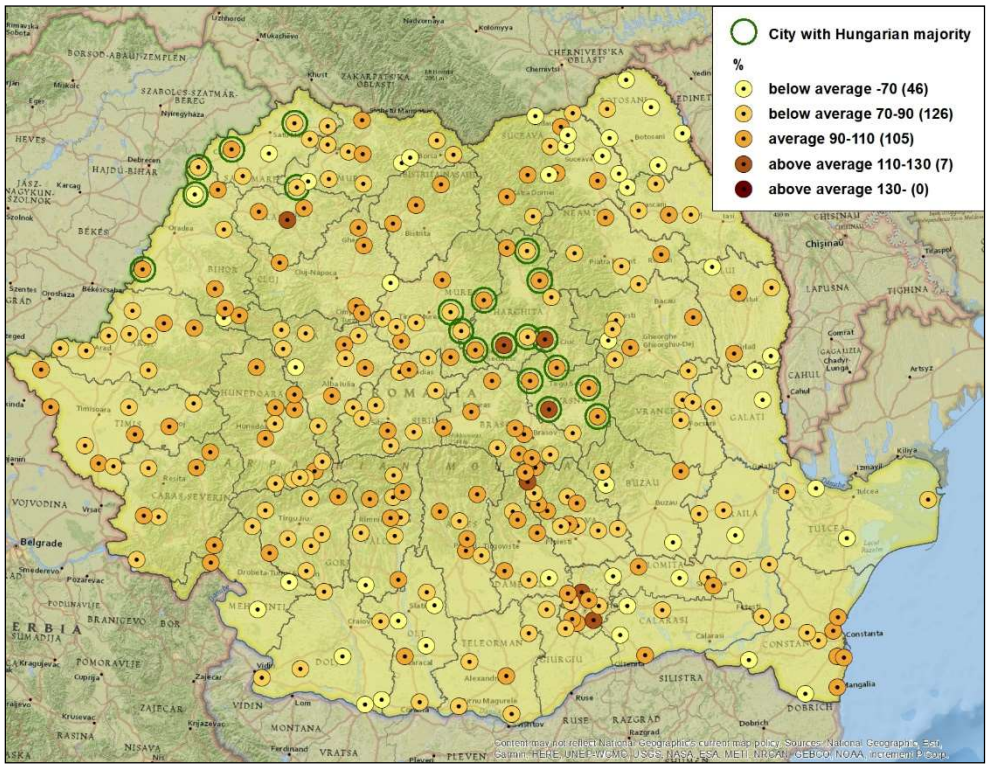


(See the numbers for each city in Figure 3.)

Socio-economic development

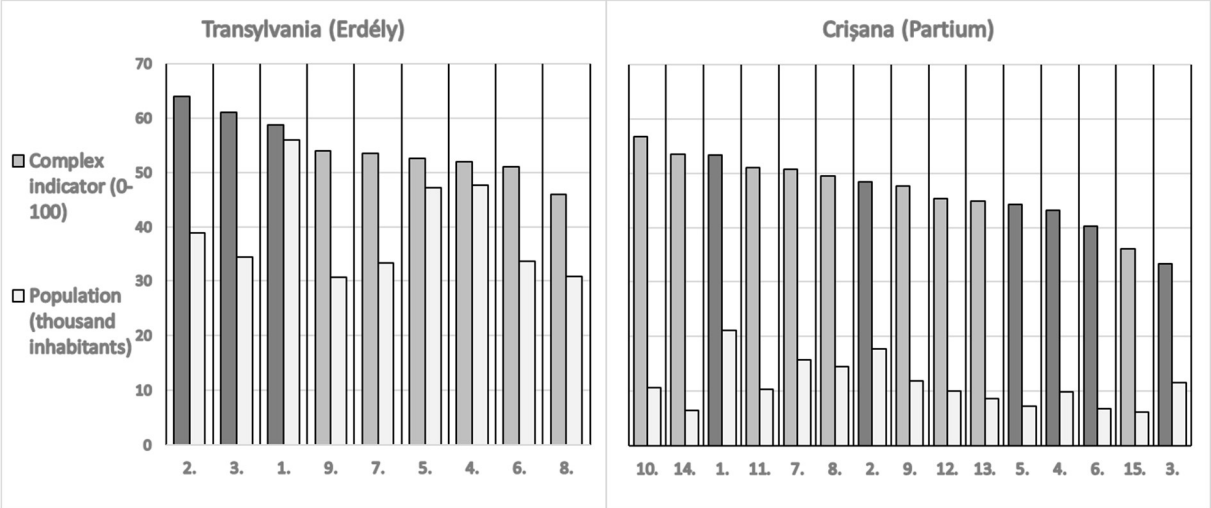
Aggregated 'socio-economic development' is a complex indicator calculated by using all indicators, determines the general social-economic development. The values of the complex indicator are distributed between 26.18 and 64.00 with an average of 54.50. 60% of the cities are below the average, except for 14 all of them are small towns. The most underdeveloped are the towns outside of Transylvania with some Transylvanian settlements (e.g. in Maramureș [Máraramos] county). The seven most advanced elements of the 284 cities are as follows in ascending order: Sfântu Gheorghe (Sepsiszentgyörgy), Sinaia, Popești-Leordeni, Zalău (Zilah), Otopeni, Odorheiu Secuiesc (Székelyudvarhely), and Miercurea Ciuc (Csíkszereda) with the highest complex indicator (Fig. 14).

Figure 14 Socio-economic development complex indicators of the 284 cities as a percentage of the average (2014)



Among the not mentioned other Hungarian majority cities nine are on the average and eight are below the average. This proportion values reflect more advantageous positions than the case of Romanian majority cities. Of course, at the territorial level, the complex indicator values of the aforementioned Hungarian majority cities of Szeklerland are higher than in the case of the cities with Romanian majority in the encompassing region. In the case of the western group of the Hungarian towns and cities, in Crișana (Partium), the small towns with Hungarian majority is are lagging behind in a regional comparison, the only exceptions are Carei (Nagykároly) and Salonta (Nagyszalonta) (Fig. 15). The complex indicator of Săcueni (Székelyhíd) is particularly low, which is one of the least developed cities on the national level too.

Figure 15 Socio-economic development complex indicators of Hungarian majority cities and their similar-sized neighbours with Romanian majority in Transylvania (Erdély) and Crișana (Partium)



(See the numbers for each city in Figure 3.)

Transylvania and Hungarian majority as city cluster forming drivers

The current study is not focused on applying other methodologies than above mentioned ones but the encompassing research project conducted also a cluster analysis (with Ward method) (Barna & Székelyi, 2008) on the same data sets (284 urban settlements, 6 complex indicators calculated from 25 statistical indicators). This analysis resulted in three distinct clusters representing cities above the average development level, and three other clusters representing cities in an underdeveloped position. Introducing just very briefly some further relevant results of this analysis it is worth mentioning that Transylvanian settlements are in greater number in the more developed clusters, while elements of the less-developed clusters consist of cities out of Transylvania in higher proportion. (The least developed cluster consists of small towns of out of Transylvania almost exclusively.) 11 urban settlements with a Hungarian majority belong to the better developed clusters (almost all of them are part of the Eastern group of these cities, in Szeklerland); and one of the more developed clusters has a quite high proportion (20%) of these Hungarian cities in Szeklerland. The Western group of the urban settlements with a Hungarian majority belong almost exclusively to the less developed clusters.

CONCLUSIONS AND DISCUSSION

In this study, all 284 Romanian cities with less than 60.000 inhabitants were described by seven complex indicators, focusing especially on the distinction between cities with a Hungarian majority and other cities. Presence of Hungarian majority can result in a more advantageous position for the cities in all development components especially in the case of Szeklerland's

cities (in the middle of Romania, at the Eastern part of Transylvania). The generally disadvantageous social and economic positions of the Hungarian minority communities inside the Romanian society (described by the current literature) does not necessarily reflected also in the development position of the cities inhabited mostly by Hungarians, especially not in the case of the cities of Szeklerland. An exception is the human resource and the demographic component, which coincides with the overall disadvantageous demographic situation of the Hungarian minority in Transylvania.

There are significant differences between the 20 Hungarian majority cities within each component. Most of the cities of Szeklerland (in the eastern part of Transylvania, in the middle of Romania) have more advantageous indicators than the national average. On the one hand, this could be explained by the remoteness of larger cities, as big city functions appear also in these smaller settlements. On the other hand, this eastern group of the Hungarian urban settlements are located in an almost homogenously Hungarian region (Szeklerland) which large enough to form a single economic-social structure, a functional area reaching possibly a critical mass for providing certain human and cultural services (and forming eligible demand for providing these services in Hungarian). This is not the case with the western group of the Hungarian urban settlements where the mostly Hungarian functional area surrounding the urban settlements is fragmented and much smaller. These Hungarian cities of the ethnically more mixed – but in general also more developed – Western border region are mostly lagging behind the neighbouring other small towns, but some of them are even below the national average. Another interesting result of the analysis, that the Western group of Hungarian majority cities in the most cases are less developed than their similar population sized cities in Szeklerland in spite of their more favourable western positions being part of the more developed western regions of the country.

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A CITY FOR THE NEXT GENERATION? INTRODUCTION TO THE 'KRAFT' COMPLEX SYSTEM OF INDICATORS IN CASE OF VESZPRÉM CITY WITH SPECIAL ATTENTION TO THE DIFFERENT AGE GROUPS OF LOCAL RESIDENTS

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Abstract

Nowadays we face the increasing significance of regions as social, cultural, political and economic interaction systems (Agnew, 2000, 2001 and Haukkala et al., 1999 in Palekiene, Simanaviciene, & Bruneckiene, 2015). Due to the ongoing changes in global economy they face several challenges regarding the well-being of their inhabitants. Meanwhile, it is worth to consider that the different inhabitants and stakeholders would have different preferences for the development and use of various sources of the settlement. The differences in the utility functions may lead to conflicts. These conflict would arise among new comers and current land owners, businesses and NGOs or among inhabitants too, even among generation groups (like the case of "OK, Boomer"). As the economic concentrations attract increasing number of residents small and medium-sized towns (SMSTs) must design programs which improves their population retention. Challenging that, the KRAFT ('Creative City, Sustainable Region') Concept developed by iASK (Institute of Advanced Studies Kőszeg, Hungary) is a regional development initiative, which focuses on the connectivity and cooperation of key players. One of the major outcomes of the initiative is the 'KRAFT' complex system of indicators ('KRAFT-index'), an analytical tool suitable to demonstrate regional development tendencies regarding eight specific development areas (economic development, governance, social vitality, health, culture, networks, natural and built environment and education, learning). In 2017 we have conducted an on-site survey: during 2 months 1,200 questionnaires have been collected in Veszprém city. The computer-assisted data collection (filling one questionnaire required about 35-40 seconds) with the tracking ensure the representability checkable. The data collection aimed at identifying and collecting opinions and attitudes of local residents 16 years old and above, having permanent or temporary address in Veszprém. The sample is representative by age, gender and district (based on an integrated urban development strategy). The aim of the current research is to highlight differences in behavioural patterns and satisfaction among the generations which could be influential in the long-term development of the city which will be the European Capital of Culture 2023. The research results underline the significance of applying the generation theory into regional strategic planning, since dominant differences would be observed how the groups evaluate the environmental conditions, community cohesion of the city, as well as what environmental factors they evaluate as important and to what extent they are attached to the settlement.

Keywords: Sustainable cities and communities, small and medium-sized towns (SMSTs), regional development, 'KRAFT' complex system of indicators, generations

INTRODUCTION

Nowadays we face the increasing significance of regions as social, cultural, political and economic interaction systems (Agnew, 2000, 2001; Haukkala et al., 1999 as cited in Palekiene

et al., 2015). The globalization and penetration of global supply chains forming new types of economic relations in regional systems (let just consider export-base theory of Douglas C. North, or The Growth Pole theory of Francois Perroux and Boudeville or The New Economic Geography by Paul Krugman for e.g.). By consequence, the research about how different territories would maximize the welfare of well-being of residents has become important. The economic – social – environmental resources, often referred as 'territorial' capital (Camagni & Capello, 2013) is vital in case of any shocks which emerge in today's world of transitions like economic downturns, industry shocks which influence the path and pattern of regional economic growth, the quality of life of the inhabitants as well as the state of built and natural environment. Regions, with specific structures, often represents an inner core-periphery system, where the importance of cities, larger settlements is high, the neighbourhood often depends on the economic viability and growth of core areas (like urban-rural linkages). As the economic concentrations attract increasing number of residents small and medium-sized towns (SMSTs) must design programs which improves their population retention. (Miszlivetz & Márkus, 2013)

Answering these challenges, the KRAFT ('Creative City, Sustainable Region') Concept developed by iASK (Institute of Advanced Studies Kőszeg, Hungary) is a regional development initiative, which focuses on the connectivity and cooperation of key players. By providing an integrated analytical framework that enables the collective recognition of individual (i.e., corporate, governmental, academic) and common interests, a more complex and profound understanding of middle- and long-term development objectives of dominant actors is sustained. This integrated approach is the key to future success and socio-economic and ecological sustainability (Miszlivetz & Márkus, 2013).

One of the major outcomes of the initiative is the 'KRAFT' complex system of indicators, an analytical tool suitable to demonstrate regional development tendencies. In connection to the development initiative a survey has been implemented in Veszprém city in 2017.

There are different kind of shocks and stresses which influence the development path of cities, regions. For SMSTs a major stress is losing population, or in other terms the challenge for population retention. The generation group studies are gaining popularity nowadays from value assessment of the society to adaption to climate change. The concept is discussed in regional science too. The current study makes an attempt to demonstrate the relevance of generation theory for strategy elaboration of SMSTs. Hence the main research question is to what extent SMSTs could serve as an attractive place to live for younger generations? The current study gives a contribution to that discussion from the perspective of a Hungarian

settlement, Veszprém aiming facilitating the research in that field in the future. Therefore, that study is composed as follows: on first hand provides theoretical background of role of cities in regional development, on second hand introduce the test area Veszprém city in brief. On third hand, at the methodological part the research framework is interpreted, introducing eight variables which have been assessed from generation groups' point of view concerning natural – social – economic – dimensions of the settlement with additional situation analysis and outcome indicators. After that, the results are highlighted concerning differences in behavioural patterns, value perception and satisfaction among the generation groups which could be influential in the long-term development of the city which will be the European Capital of Culture 2023.

THEORETICAL BACKGROUND

Considering the importance of cities in regional developments several attempts have been made in order to assess and make comparable the performance of cities in maximising human wealth or quality of life (QOL). The Quality of Life is the output of sustainable use of endogenous and exogenous factors implemented by regional/ urban development programs (Camagni & Capello, 2013). For instance, The Urban Sustainability Index (USI) used by van Dijk and Mingshun (2005) measures the urban status, coordination, and potential of four Chinese cities, while the Urban Vitality Index (UVI) by Yang, Su, & Chen (2010) emphasize the that urban ecosystems are parallel to vital organisms in terms of structure, function, performance and evolution, thereby the development status is the function of economic, social, natural and ecological regulatory subsystems respectively. Even national initiates exist like the Malaysian Urban Indicators Network as discussed by Marzukhi et al. (2011): sustainability city indicators can be seen as a measure that gives a summary of information about the subject of the problem. Applying system perspective too, the Winnipeg Quality of Life Indicators call the attention to human needs' compliance requirements, as Hardi and Pinter (2007) introduces the fundamental of the set of indicators in Winnipeg which aims to assess to what extent that people value QOL in the settlement; how they appreciate the size and pace of the city and its amenities; to what extent they are attached to their neighbourhoods; and whether they feel that Winnipeg is a great place to raise a family. There are other measures which aim at determining the inhabitants' QOL in a settlement. Mercer, an American leading provider of data on quality of living for employees sent to work abroad publishes each year a 'Quality of living city ranking' which

evaluates the performance of nearly 500 global assignment destination (from Hungary Budapest is included) on recreation, housing, economic environment, consumer goods availability, public services and transport, political and social environment, natural environment, socio-cultural environment, school and education and finally, medical and health considerations (mobilityexchange.mercer.com, online). Another one, the 2018 edition of Arcadis' Sustainable Cities Index (SCI) explores city sustainability from the perspective of the citizen ranking 100 global cities (from Hungary Budapest is included in, too) on three pillars of sustainability: People - social, Planet - environmental and Profit – economic (Arcadis, online). The liveability survey by the Economist Intelligence Unit, what is the research and analysis division of The Economist Group simply assesses which locations around the world provide the best or the worst living conditions based on more than 30 qualitative and quantitative factors across five broad categories: stability, healthcare, culture and environment, education, and infrastructure (EIU, 2019). The free overview of the 2019 version lists the five biggest improvers as well as decliners, the ten most and least liveable cities worldwide. According to the 2019 version half of the most liveable cities are in Europe, from which Vienna is the first (EIU, 2019). As we can see, the most common indexes measuring QOL examine rather larger settlements, while we could find few ones which analyse SMSTs too (for e.g. the liveability assessment of CSR Hungary in 2012). The assessments/ indexes would be exploited as a policy instrument by which decision-makers would learn from other cases designing appropriate action series. Due to the developments of ICT sector, the demonstration of such measures could be implemented quite effectively. An example for that would be definitely the Cultural and Creative Cities Monitor of the European Union which second edition has been published in 2019 how well 190 cities in 30 European countries perform on a range of measures describing the 'Cultural Vibrancy', the 'Creative Economy' and the 'Enabling Environment' (composite-indicators.jrc.ec.europa.eu, online). The monitor uses five size category of settlements based on the number of inhabitants (XXL, XL, L, M, S). Six Hungarian are included in the 2019 version; one of them is Veszprém. Fundamentally, there are different types of indexes for evaluating the performance of cites from the perspective of different target groups. One branch, like the index of Arcadis or Mercer ranks cities from the attractiveness point of view in favour of the inhabitants, businesses, tourists and potential investors. The other major branch contributes to policy-development either on small-territorial scale (like Winnipeg Quality of Life Indicators) or on city networks (Cultural and Creative Cities Monitor of the European Union). The more one index is based on available, hard data from international databases the more replicable.

Otherwise, by the combination of hard and soft indicators, not just the behavioural patterns would be examined, but the attitudes and motivations of inhabitants too, which is not covered by general data collections. The KRAFT system of indicators belong to the second category and aims to help policy and strategy development. In the current study, such measures will be discussed which concerns the QOL of inhabitants, more precisely the value perception of inhabitants on environmental factors; faith in other people, institutions; satisfaction with environmental conditions and he income situation of own households; as well as attitudes on attachment to the city and ambitions to live in the city on long run.

Regional development, aiming to maximize the welfare of inhabitants, to create a sustainable territorial structure for long term viability trough the mobilization and exploitation of local resources has high importance in population retention. Nevertheless, as while Simmie and Martin (2010) point out regional development is far from a smooth and incremental process, instead, it is the subject to all sorts of interruptions and disruptions (unexpected plant closures, unpredictable rise of major competitors, challenges arising from technological change and the like), and the state responses answering these challenges and the degree of decentralization and the adaptive capacity is different from territories to territories. Fekete (2018) for instance examines the economic development and governance pathway of a Hungarian regional centre underlying the importance of time dependent and evolutionary nature of urban systems' boost.

Increasing differences among regions and income inequalities within societies contributed to the increasing scientific interest concerning complex assessment of territories. Rácz, Koós & Neumark (2006) examine social, economical relations of disadvantageous regions including employment patterns, income sources and income vulnerability, mobility trends, intergeneration mobility of the society, relational specialities role of weak and strong relations in humans' life, connectedness to various public and civil institutions and attractiveness of city, fidelity of inhabitants. Furthermore, answering the different needs of humans/ generation groups in urban development is an addressed issue by several studies. Barysheva and Kashchuk (2015) examining the impact of territorial marketing on improving the socio-emotional well-being of the older generation finds, that it is a useful tool creating and maintaining comfortable living conditions of different age groups, taking into considerations their characteristics, however it is a challenging issue whether generations should have their own area of activity and rest. Gébert, Bajmócy, and Málovics (2017) points out, while several study emphasize the importance of quality of life and liveable cities, in reality the core point of regional development is to operate and maintain the "urban growth machine" by Kirkpatrick & Smith (2011).

Challenging that, they suppose an "people-centred" analytical-evaluation approach based on the capability approach of Amartya Sen (1999).

Evidence both from the capability approach and Christaller's central place theory, that the size of the settlement determines high extent the development possibilities. Servillo, Atkinson & Hamdouch (2017) introducing a Special Issue *in Tijdschrift voor Economische en Sociale Geografie* explains, that recently most attention has been paid to larger urban and metropolitan areas, within which smaller settlements are considered to constitute embedded settlement configurations largely 'subservient' to the metropolis. They emphasize, that the size issue that the terms themselves 'small and medium-sized towns (SMSTs)' carry is controversial: cities that are smaller than other cities imply the presence of a threshold that tends to become blurred when we observe a territory that has a wide variety of urban forms and different patterns of land use. Although, the importance of size (expressed by the number of inhabitants for e.g.) is inevitable, it is relative and moreover depends on the territorial context in which the urban settlement is located which varies from country to country. Their development is a function of macro and meso-trends affecting socio-economic dynamics of regional systems, in which the importance of capacity-building factors (both countable and uncountable) ascend. Kovács (2017) calls the attention too, to demographic changes to which urban strategies with special attention to cultural heritage exploitation could be a good perspective like in Kisújszállás. The examination of these capacity building factors often refers to the ecosystem services phenomena: La Rosa, Spyra, & Inostroza, (2016) consider cultural values as vital source for development. Morvay (2017) underlines the importance of culture-based economy and calls the attention to the European Capital of Culture program. In addition to cultural development Shaw & Kidd (2001) explains that, there is a growing appreciation that environmental considerations must be taken into account, balanced against and integrated into decision making processes particularly in relation to what might be considered the dominant forces of economic and social development.

DATA AND METHODS

Short description of the test area: Veszprém. Veszprém is one of the oldest urban areas in Hungary, a city with county rights. It is 15 km far from the Lake Balaton. The city with 56.000 (2018) residents is the administrative centre of the county of the same name. Veszprém is a historic town, a regional centre of the catholic church, a place, where the first institution of

higher education was established in the country that taught the seven liberal arts as early as the 13th century. The historic centre of Veszprém is the castle. The present-day historic town evolved during the town development constructions of the 18-19th and the early 20th century. World War II and the following period caused relatively little damage to the old centre. (veszprem.hu, online; www.veszpreminfo.hu, online; Örsi, Á., 1994)

Characteristics of the settlement. From population dynamics perspective Veszprém has become a significant centre after World War II, from the '50s to the '90s its population has been tripled (nepesseg.com, online). The population size was at maximum in 1990 when more than sixty-thousand inhabitants lived in the city. After that, the population size has been decreased. Parallel to the loss of the population the aging index of the settlement is continuously rising: in 2008 it was 151.7, while in 2017 it is197.6 according to the Hungarian Central Statistical Office [HCSO], which is higher than the Hungarian average (178.4 in 2017). The decrease in the inhabitants' number is due to both the natural population loss and to the negative migration balance generally. The ratio of inhabitants has university degree according to the last population census in 2011 is 21.7%, which is significantly higher than the Hungarian average (12.7%). Veszprém has a diversified, strong local economy, the most important economic sectors are the machine, electrical, automotive, chemical, food, building, press and furniture industries, with the logistics sector also becoming more and more significant (investinveszprem.com, online). The preferable economic status is reflected by the income patterns: the brut net income per inhabitant is continuously increasing from 2009 and significantly higher than the Hungarian average. It may seem unreasonable that despite the stable economic performance of the city it has challenges with population retention. In relation to that the integrated urban development plan for the programming period between 2013 and 2020 discusses that new development programs aiming the introduction of higher-value added industries would improve the capacity (veszprem.hu, online). The strategy points out other challenges which mainly concern the traffic and poor travel conditions, conservation of natural resources, limited property of the local administration, maintenance and reconstruction of the built environment. From the viewpoint of introducing new type of economic development activities the fact that Veszprém won the title of the European Capital of Culture in 2023 has high importance. For the elaboration of the project, Veszprém applied jointly with the Bakony and Balaton Region for the ECC title, which will aim that culture and high added value creative industries would become the main motor of regional development (2023veszprem.hu, online).

Data. The data collection aimed at identifying and collecting opinions and attitudes of local residents 16 years old and above, having permanent or temporary address in Veszprém. All respondents have been asked with the same questionnaire by the trained interviewers. In relation to the city survey 1,200 questionnaires have been collected. Computer-assisted data collection with tracking ensures the representability checkable. The sample is representative by age, gender and district. The questionnaire combines closed and open-ended questions. Closed questions concern both ordinal data (using 4-point Likert scale) and nominal data when different categories were restricted to a few options. In a few cases open questions were formulated in order to allow people to express what they think in their own words. Totally more than 60 questions have been asked in relation with economic development, governance, social vitality, health, culture, networks, natural and built environment and education, learning. Due to the collection of date of birth of all respondents, it is realizable to carry out the current research. From the wide range of questions, moreover hundreds of variables the study aims to analyse some aspects which are influential for urban development initiatives (based on reviewing the scientific literature interpreted) which are highly recommended to take into account concerning generation groups' in decision making processes.

Research themes and methods. At first, how the generation groups are distributed in districts is analysed. Next, the value perception of environmental factors and satisfaction level towards various elements of natural environment of generation groups is explained which provides comprehension to what kind of factors they consider most valuable in the city and how they evaluate current status and actions implemented for their conservation/ maintenance. From long-term viability perspective it is crucial that the economic base of the city should provide favourable job opportunities for inhabitants and or generally the inhabitants would have enough income to live. Consequently, the assessment of satisfaction of with the income level of the household is discussed. The extent how inhabitants could rely on others in case of various difficulties have enormous impact on their well-being. Thus, this also part of the research how generation groups could expect help from different organizations/ groups in the city. The analysis provides information about the social connectedness of different age groups, too. Finally, two outcome indicators are discussed: first, to what extent are respondents attached to the city, secondly would they plan to live in the city on long run. Tab. 1 is about the themes, variables examined, scales (if relevant) and indicator applied in the analysis. The study uses basic statistical indexes, scales for analysis with the help of MS Excel Program.

Table 1 Structure of the research

Theme	Variable	Scale	Method/ indicator
General information	Respondents by generation groups, sex	-	Distribution of respondents by generation groups, sex (%)
	Distribution of respondents by generation groups, districts	-	Share of inhabitants in the eight city districts (%)
		-	Distribution of respondents by generation groups in the eight districts (%)
Natural environment	Value of environmental factors	4-point Likert Scale	Value perception in generation groups: proportion of respondents grading '1' and '4' Most important natural environment elements on generation groups' average level (%)
	Satisfaction with environmental conditions	4-point Likert Scale	Proportion of satisfied respondents by generation groups (%)
Economic, income status	Satisfaction level of respondents concerning the income situation of own households	4-point Likert Scale	Proportion of least and less satisfied respondents to rather and absolute satisfied by generation groups (%)
Society	Help and support in difficulties – faith in other people, institutions	4-point Likert Scale	Proportion of respondents by generation groups to what extent they could rely on others or except help at their surroundings in case of various difficulties (ratio of strongly disagree and disagree to agree and strongly agree)
Outcomes	Attachment to the city	4-point Likert Scale	Proportion of respondents by generation groups and categories (none, low, moderate, high) (%)
	Ambitions to live in the city on long run	4-point Likert Scale	Proportion of respondents by generation groups who strongly disagree, agree and strongly agree (%)

Source: own compilation

As seen, the questionnaire uses 4-point Likert Scale questions for measuring, value, satisfaction, and agreement. Tab. 2 explains the values by categories.

Table 2 Value of 4-point Likert Scale questions

Category	1	2	3	4
Value	None	Low	Moderate	High
Satisfaction	Least satisfied	Less satisfied	Rather satisfied	Absolute satisfied
Agreement	Strongly Disagree	Disagree	Agree	Strongly Agree
Importance	Not important	Less important	Important	Very important

Source: own compilation

It must be stated, that the analysis and results may have limitations on modelling the functioning and motivations of local societies. The analysis would carry out results for first exploration but

in order to comprehend generation groups' role, their specific needs use of qualitative methods are highly recommended.

RESULTS AND DISCUSSION

In this section the results of the statistical analysis are interpreted according to the research framework.

General information

Among the respondents 46.75% is male, 53 25% is female. For most of the generations male and female respondents are more or less evenly distributed, except the Baby boomers in which the number of female respondents are the double of males. (Tab. 3)

Table 3 Distribution of respondents by generation groups, sex (%)

Generation	Definition	Participants (%)	Sex (%)	
			Male	Female
Veterans	–1946	6.08	46.58	53.42
Baby boomers (often referred in Hungary as *'Ratkó Generation'*)	1946 – 1964	31.42	37.14	62.86
Generation X	1965 – 1979	32.75	50.13	49.87
Generation Y	1980 – 1994	21.83	52.29	47.71
Generation Z	1995 – 2010	7.92	55.79	44.21

Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

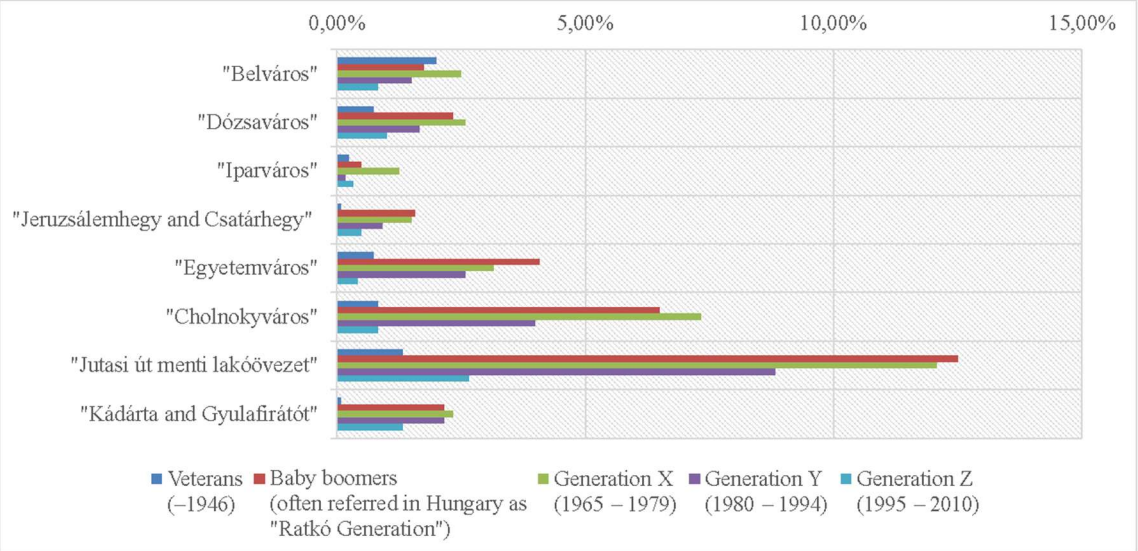
In order to ensure representativeness, eight districts/ surroundings have been considered when construing the sample with the appropriate ratio of inhabitants as indicated:

1. *'Belváros*', the city centre (8.58%);
2. *'Dózsaváros'*, one of the oldest part of the settlement (8.33%);
3. *'Iparváros'*, the industrial part (2.50%);
4. *'Jeruzsálemhegy and Csatárhegy'*: Jerusalem Hill ('Jeruzsálemhegy') is a part with small streets and family homes while Csatár (*'Csatárhegy'*) is a grape hill (4.58%);
5. *'Egyetemváros', 'University town'* part of the city with The University of Pannonia and its facilities (11.00%);
6. 'Cholnokyváros', part of the settlement named after Jenő Cholnoky, a famous Hungarian geographer, hydrologist who was the member of Hungarian Academy of Sciences, born in Veszprém in 1870 (19.50%);
7. 'Jutasi út menti lakóövezet', residential area along the Jutasi road dominated by housing estates built in the '70s and '80s (37.42%);
8. and finally, 'Kádárta and Gyulafirátót', where detached houses dominate the landscape (8.08%). (Csapó, Lenner 2012, veszprem.hu online)

Csapó, and Lenner (2012) describing the settlement structure of Veszprém emphasize that horizontal plan of city clearly reflects its development path: how the structure of the fortress-based medieval town has been renewing including the involvement of the surrounding hills, development of the industrial zone. The structure also reflects the accelerating importance of preserving and maintaining urban green zones near to larger dwelling zones increasing the liveability of the city.

The more the population live in a certain district the more the probability for diversified generation portfolio, as we could observe from the results of the assessment of the city area composition by generations. Another effect on the diversification of the sample that the generation groups are unevenly distributed (as in reality) among the population, hence due to the size-effect larger segments are fragmented to higher extent than others. The next figure indicates how the population is distributed among the districts of the settlement, and furthermore how the population in those districts are diversified by generation groups.

Figure 1 Generation groups (% of total population) by districts in Veszprém city



Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

Summarizing the results: all generation groups appears in all city areas, so they are living together in specific mixed communities in neighbourhoods. The distribution of the inhabitants is uneven, since around 68% live in three districts: the university town, 'Cholnokváros' and the residential area along the Jutasi road. Four generations expect the Veterans live in with the highest share in the largest district, the residential area along the Jutasi road (37.42%), while the highest ratio of the Veteran community lives in the city centre (2.0%), where just the ratio of Generation X (2.50%) is higher from the sample. Tab. 4 presents ranking values of how generation groups are distributed in districts (100% per generation group). It would require deeper analysis assessing how the different generations would live together, but it seems that

in case of the city centre, it is quite challenging that elder generations dominate it, while those parts of the city would be essential for younger ones to find the settlement 'viral'. It could be hardly managed that how the differences in the utility function in connection to usage could be addressed by urban development. The mixture of various purposes may cause conflicts among inhabitants (let's just consider the negative externalities of new business models for renting, or increasing noise level due to entertaining facilities).

Table 4 Generation groups' ranking in districts (2017)

No.	Districts	Veterans	Baby boomers	Generation X	Generation Y	Generation Z
1.	'Belváros'	1.	6.	5.	6.	4.
2.	'Dózsaváros'	4.	4.	4.	5.	3.
3.	'Iparváros'	6.	8.	8.	8.	8.
4.	'Jeruzsálemhegy and Csatárhegy'	7.	7.	7.	7.	6.
5.	'Egyetemváros'	5.	3.	3.	3.	7.
6.	'Cholnokyváros'	3.	2.	2.	2.	5.
7.	'Jutasi út menti lakóövezet'	2.	1.	1.	1.	1.
8.	'Kádárta and Gyulafirátót'	8.	5.	6.	4.	2.

Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

Natural environment

Inevitably influential part of quality of life of inhabitants in urban areas is the quality of natural environment. Respondents have been asked on one hand to name *the value of various natural elements*, on the other hand to explain their *satisfaction towards environmental conditions*. Tab. 5 introduce the elements of the analysis.

Table 5 Natural environment, factors

First variable	Environmental factors, issues	Second variable
Value of environmental factors (1: none, 4: high)	Air quality of the settlement	Satisfaction with environmental conditions (1: Least satisfied, 4: absolute satisfied)
	Natural waters (lakes, rivers)	
	Ground and groundwater	
	Noise	
	Waste, selective waste collection	
	Natural environment: protected areas, woods, animal and plant species	
	Cleanliness of the settlement	

Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

In case of the first variable, to investigate the value perception of generation groups the proportion of respondents grading '1' and '4' has been analysed. Tab. 6 indicates the share of those respondents who consider the different natural elements not important is low, often

represent a small group of people, consequently strong conclusions could not be drawn, nevertheless it is quite positive result, that there are more topics which none of the respondents of Generation Z considers not important.

Table 6 Environmental factors and issues considered non-valuable by respondents (ratio of each generation groups, minimum and maximum values in bold)

Environmental factors, issues	Answers to 'none' by generation groups (%)				
	Veterans	Baby boomers	Generation X	Generation Y	Generation Z
Air quality of the settlement	**1.37**	0.80	1.02	1.91	1.05
Natural waters (lakes, rivers)	**1.37**	1.06	**0.25**	3.05	**0**
Ground and groundwater	**1.37**	0.53	**2.04**	2.29	**0**
Noise	**1.37**	**2.39**	1.53	**4.58**	**3.16**
Waste, selective waste collection	**1.37**	1.06	1.78	1.53	**0**
Natural environment: protected areas, woods, animal and plant species	**1.37**	**0.27**	1.27	2.29	**0**
Cleanliness of the settlement	**1.37**	0.53	1.78	**1.15**	**0**

Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

More than 50% of all respondents of each generation groups declares that the listed factors/ issues have high value (Tab. 7). It is interesting that, on group level, in case of the younger generations the focus moves from result-type of elements (like cleanliness of the settlement or waste management) to natural capital equity (natural waters, protected areas, woods, animal and plant species).

Table 7 Environmental factors and issues considered highly valuable by respondents (ratio of each generation groups, minimum and maximum values in bold)

Environmental factors, issues	Answers to 'high' by generation groups (%)				
	Veterans	Baby boomers	Generation X	Generation Y	Generation Z
Air quality of the settlement	67.12	63.13	63.36	56.49	69.47
Natural waters (lakes, rivers)	64.38	61.80	63.10	**59.16**	67.37
Ground and groundwater	67.12	**64.46**	61.58	**59.16**	67.37
Noise	**60.27**	**61.27**	60.05	**53.05**	**58.95**
Waste, selective waste collection	65.75	**64.46**	63.10	54.20	69.47
Natural environment: protected areas, woods, animal and plant species	**68.49**	63.13	**61.07**	55.34	**72.63**
Cleanliness of the settlement	**68.49**	62.86	**64.38**	57.25	67.37

Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

Tab. 8 indicates the ranking of factors based on the value perception of generation groups. Besides the average, the standard deviation has been calculated to express the variability among groups.

Table 8 Most important natural environment elements on generation groups' average (%)

No.	Elements	Mean	Standard deviation
1.	Natural environment protected areas, woods, animal and plant species	64.13	6.69
2.	Cleaniness of the settlement	64.07	4.43
3.	Ground and groundwater	63.94	3,56
4.	Air quality of the settlement	63.91	4,93
5.	Waste, selective waste collection	63.40	5,66
6.	Natural waters (lakes, rivers)	63.16	3,04
7.	Noise	58.72	3,27

Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

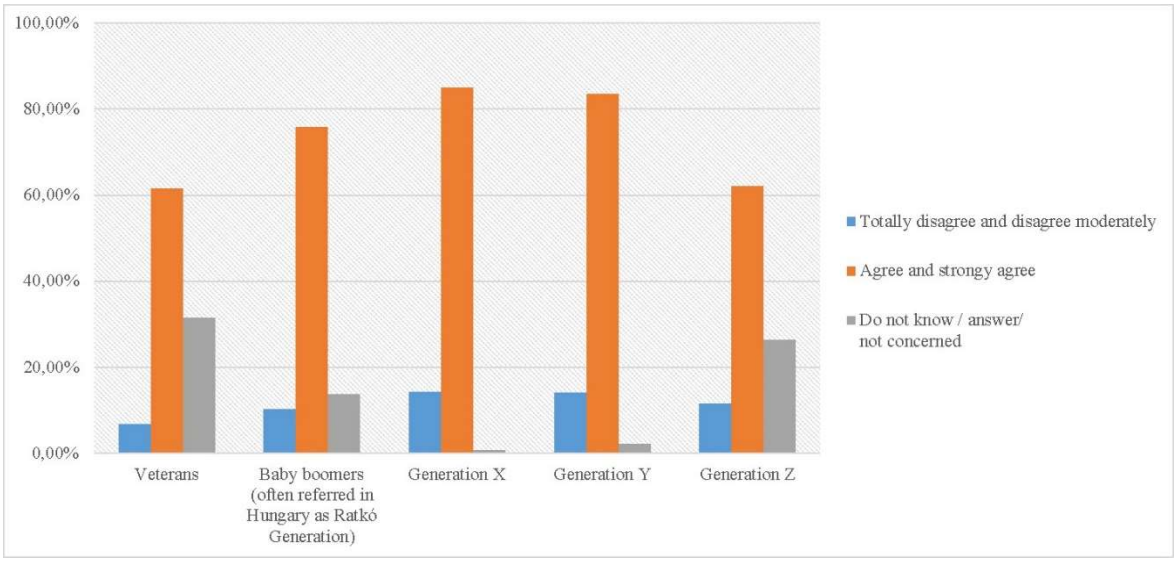
The other variable examined in relation to natural environment is the *satisfaction with environmental conditions*. As already mentioned, basically the respondents are satisfied with the state, availability, quality of the natural environment/ capital, considering that the proportion of answers for 3 or 4 (rather and absolutely satisfied) for each element is above 80% on average. Satisfaction with air quality of the settlement (85.51%), natural environment: protected areas, woods, animal and plant species (85.34%) and natural waters: lakes, rivers (85.07%) has reached the highest portion on average. The average satisfaction level on one hand is the highest in case of Baby boomers (86.40%) while the standard deviation is quite preferable (2.16%), they are satisfied the most with the state of ground and groundwater and noise (in both case the proportion of answers for 3 and 4 is around 88%), on the other hand is the lowest is the lowest in case of Generation Y (80.26%), with the highest standard deviation among generation groups (3.48%); they are less satisfied with air quality (79.01%), state of ground and groundwater (77.86%) and noise (74.73%) on average. From the evaluated elements of the environment, the average satisfaction level of generation groups' standard deviation is the highest in case of noise level (5.13%), air (3.96%) and state of ground and groundwater (both 3.94%) meaning that the generation groups' satisfaction level differs the most in case of these items.

Economic, income status

For assessing the satisfaction level of respondents concerning the income situation of own households, they have been asked to evaluate the following statement: *'I am satisfied with the income level of my household'*. Besides the four options one other option was provided for those who does not answer, cannot answer (do not know or not concerned). Around 91% of the residents made statement: 1.17% totally disagree, 11.17% disagree moderately, 38.00% agree and 40.58% strongly agree. The percent of inhabitants agrees with the statement is above 80% in 'Iparváros', 'Cholnokyváros' and 'Jutasi út menti lakóövezet'. They are followed by the 'Belváros', 'Jeruzsálemhegy és Csatárhegy', 'Egyetemváros', 'Dózsaváros' and finally 'Kádárta és Gyulafirátót' where the proportion is still preferable, as it's above 50%.

From the five generation groups Generation X and Y are the most satisfied followed by Baby boomers, then Veterans and finally Generation Z. In case of the last two the proportion of respondents who does not answer, cannot answer (do not know or not concerned) is relatively high compared to other generation groups which in case of Generation Z possibly due to the fact they are in dependent status.

Figure 2 Satisfaction with the income situation of the household of the generation groups



Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

Society

Both strong and weak relations have emergent role in forming one's well-being. In the research we have asked respondents from whom they would expect help and support in difficulties, do they have faith in other people, institutions. Tab. 9 describes the research model.

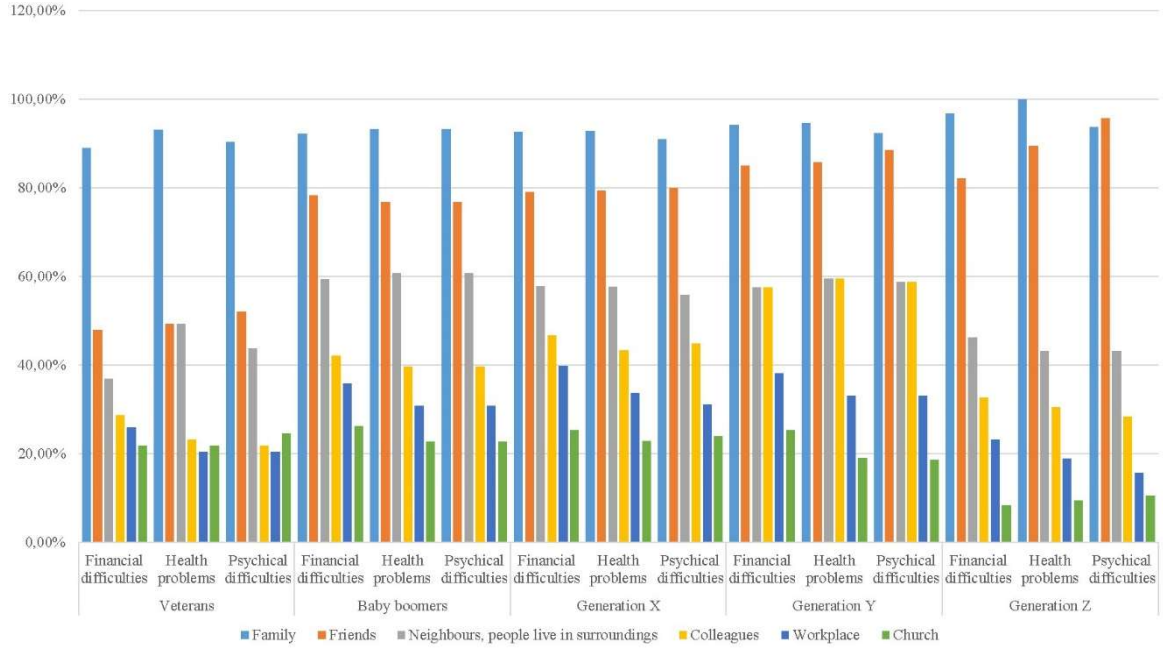
Table 9 Society – research model

Relations	Type of difficulties		
	Financial	Health	Psychical
Family	Ratio of generations • strongly disagree and disagree; • agree and strongly agree.		
Friends			
Neighbours, people live in surroundings			
Colleagues			
Workplace			
Church			

Source: own compilation

In case of any kind of difficulties the generations could expect help from family members. Concerning friendships, the differences are slightly higher: from generations to generations the level of reliance grows. Generally, respondents would rely more in family members, but in case of Generation Y and Z we can see in case of psychical difficulties, they prefer friends. Lesser extent, but neighbours, people live in surroundings are also important: around half of the generation groups agree and strongly agree they could expect help from them. The share of respondents who could rely on church in case of any kind of difficulty is moderate, from Baby boomers to Generation Z stands at the last place of examined relations/ institutions. Lesser extent than friends, but it worth to note, that in case of Generation Y the respondents agree and strongly agree they could rely on colleagues is significantly higher than other generations.

Figure 3 From whom generation groups expect help? (Proportion of respondents agree and strongly agree)

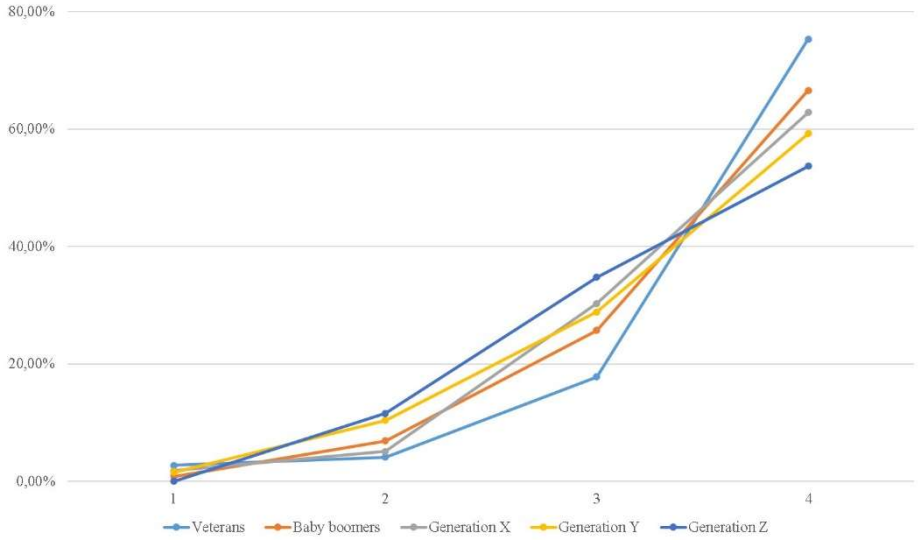


Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

Outcomes

Attachment to the city and *ambitions to live in the city on long run* are the two variables from the range of outcome indicators which have been analysed currently. In case of the first variable, the distribution of respondents providing valid answer (0.2% has not answered) are: none (1.3%), low (8.6%), moderate (36.7%) and high (63.2%). As Fig. 4 indicates the level of attachment to the city is rather moderate and high among respondents. The proportion of respondents rating '4' is highest in case of the Veterans and shows diminishing tendency from generation groups to generation groups. The appropriate value in case of Generation Z (32.22%) is half of the Veterans' one (65.28%).

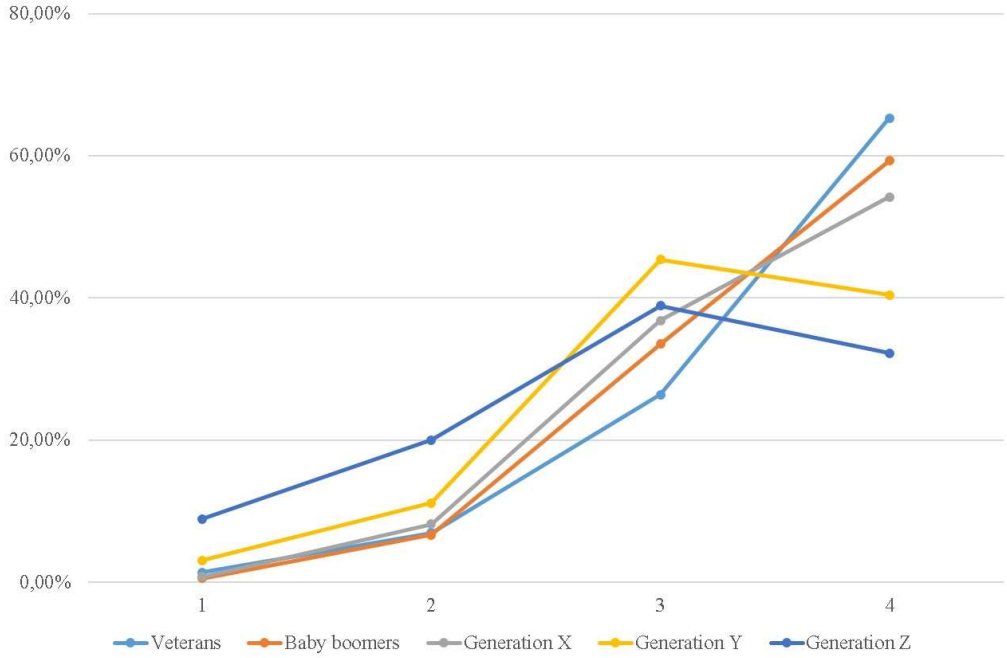
Figure 4 Attachment to the city by generation groups



Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

Last, *ambitions to live in the city on long run* is examined, which is one of the most important indicators for urban development, as it expresses the inhabitants' motivation being part of local community. According to Fig. 5 all generations would agree and agree strongly that they would live in the city on long run. Nevertheless, it is quite clear, that in case of Veterans, Baby boomers and Generation X the highest share of answers is achieved in case of option 'strongly agree' meanwhile, the local maximum of share is at 'agree' in case of Generation Y and Z meaning that the strength of willingness of younger generation groups' is lesser than 'elder generation', but still remarkable.

Figure 5 Ambitions to live in the city on long run by generation groups



Source: own compilation based on the results of the city survey in Veszprém city (N=1200), 2017

CONCLUSION

Current study considers regions as social, cultural, political and economic interaction systems which aims maximize the welfare of well-being of residents. In this process, economic – social – environmental resources, often referred as 'territorial' capital is vital, and the availability and accessibility as well as exploitation of these capital elements imply an inner core-periphery system, where the importance of cities, larger settlements is high, the neighbourhood often depends on the economic viability and growth of core areas. Recently most attention has been paid to larger urban and metropolitan areas, within which smaller settlements are considered to constitute embedded settlement configurations largely 'subservient' to the metropolis. Nevertheless, 'small and medium-sized towns (SMSTs)' are important in spatial structures from societal, economic and ecological point of view, or more holistically, from diversity perspective. Nowadays, the functioning of urban areas is more diverse than simply 'economic engines'. They are reliable for the exploitation of material and immaterial resource supply including population matters, income sources. Societal challenges, like income vulnerability, mobility trends, intergeneration mobility of the society, relational specialities role of weak and strong relations in humans' life, connectedness to various public and civil institutions and attractiveness of city, fidelity of inhabitants are requiring strategies enhancing long-term development. Programs, which aims to enhance well-being of cities should avoid consider population as a 'mass', rather creating and maintaining comfortable living conditions of

different age groups, taking into considerations their characteristics, however it is a challenging issue whether generations should have their own area of activity and rest.

This study provides insights into a study which is consisted of the analysis of eight variables which have been assess from generation groups' point of view concerning natural – social – economic – dimensions of the settlement and additional situation analysis and outcome indicators of Veszprém city. The elaborated analysis underlines that it is worth to take attention to special needs of generations in urban planning. The analysis has carried out that there are more environmental factors which younger generations consider important, which potentially could be the effect of 'climate crisis'. From the evaluated elements of the environment, the average satisfaction level of generation groups' standard deviation is the highest in case of noise level (5.13%), air (3.96%) and state of ground and groundwater (both 3.94%) meaning that the generation groups' satisfaction level differs the most in case of these items – however the differences in the perception of the noise level would contribute to the less harmonized "together-living" of the generation groups. The generation groups' satisfaction with their income status is quite preferable, among the generations which have jobs currently it is higher than the others, meaning that the city would offer jobs with good salaries. From QOL perspective, an integrated community has high importance. The results show that the inhabitants have diverse relation structure and would expect help from others, nevertheless there are generational differences. The research has carried out that the level of attachment to the city is rather moderate and high among respondents, but the proportion of respondents rating '4' has a diminishing tendency from generation groups to generation groups. All generations would agree and agree strongly that they would live in the city on long run. Nevertheless, it is quite clear, that in case of Veterans, Baby boomers and Generation X the highest share of answers is achieved in case of option 'strongly agree' meanwhile, the local maximum of share is at 'agree' in case of Generation Y and Z meaning that the strength of willingness of younger generation groups' is lesser than 'elder generation', but still remarkable. From the results it is quite evident that inhabitants like to live in Veszprém and has strong connections to the settlement. The absence of those industries which attract and retain highly qualified population limits the attractiveness of the city, meanwhile the 2023 European Capital of Culture program and connecting regional development would be a large step forward.

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THE APPEARANCE OF GERMAN DIRECT INVESTMENT IN CONNECTION WITH THE PRESENCE OF GERMAN MINORITY IN HUNGARIAN SMALL TOWNS

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Abstract

In the decades, following the political transition more and more researchers started to study the Hungarian small towns because of the increasing number of settlements belonging to this category and their dominant role in the urban network. The literature studying the opportunities in foreign direct investment do not deal or only negligently deal with the effects of social and economic processes on the life of small towns. After reviewing the different approaches of location theories, we can get an overall picture in the relation of settlements and direct investment. This gives answers to the specific forms of direct investment flow and settling in East-Central Europe as well. Besides this, the presence of German minority as the indicator of the settling of direct investment is a missing segment of literature. This study presents the partial results of our research, which aims to complement this missing literature and studies the presence of German direct investment in the small towns of Hungarian settlement structure. It analyses the historical German-Hungarian relations, through which it describes the role of German minority in the economy and the settling of direct investments. The research studies the sectoral structure, the special pattern and it differentiates the importance of German direct investment with the help of data from the available databases (DUIHK[25]-member list and creditreform.hu – HVG TOP 500 enterprises), structured in-depth interviews (leaders of settlements, directors of companies and civilian organizations related to German minority) and regression analysis. The impact of foreign direct investment on social life, its role in living a life of a small town dweller and in obtaining the title of township are introduced by two short case studies. One of the settlements is Bonyhád, having one of the largest German minority and the other is Újhartyán, belonging to the outer ring of agglomeration of Budapest. Besides their favourable potentials the presence of German minority plays a crucial role in forming the economic and social life of these settlements. Our study shows the presence of German direct investment adjusting to the spatial structure of Hungarian economy and its sectoral differentiation is specific to a given region.

Key words: small town, German minority, applied methodology

INTRODUCTION

The 1990s brought about changes in the expansion of German enterprises regarding their geographical orientation. By the opening of the markets of former socialist countries the German enterprises found new markets, thus by the 1990s the more developed countries of the

[25] Deutsch-Ungarische Industrie- und Handelskammer

region (Czech Republic, Hungary, Poland) were among the most important target areas. In that time, in East-Central Europe the German direct investment often resulted in the relocalization of production capacity. These were mainly market-based, though, at the same time they were cost-oriented as well. The relocalization of production and supply capacities in the first half of the 2000s become a more and more important element in the international division of labour. In Hungary, relocalization mainly affected the electronics industry and the car manufacturing (Hunya & Sass, 2006). After the turn of the millennium the second wave of „eastern expansion" has begun. The attraction of foreign direct investment has a great importance in the economic development of both the developed and developing countries. Outsourcing in developed countries like Hungary had placed industrial activity which played a significant role in the reindustrialization of Hungary (Barta, Czirfusz, & Kukely 2008). From the installation factors, many soft elements come to the fore during reindustrialization. The widening of supplier network can be observed in relation with multinational corporations, which are settling down in the lower levels of settlement hierarchy as well.

Present study analyses the effects of German minority on the economic life of the given settlement based on local advantages formulated in the location theory of Porter (1996). It is rooted in the German-Hungarian historical relations, which are undoubtable, though their strength and judgement are altering. Our aim was to find out whether the presence of German minority acts as an installation factor or not. Does the German direct investment have a dominant economic role in small towns? Is a settlement with less than 30,000 inhabitants suited for a multinational enterprise? Do we find any small town in Hungary having large employers with German interests and does the presence of German minority have a dominant role in its settling? Regarding the sectoral division in small towns, either the shared service functions or the economic life is centred around the trio of production-storage-commerce. The research also includes the questions regarding corporate social responsibility (sponsoring events, supporting institutions, development of playgrounds or infrastructure, eco-conscious attitude), which we identify as the role of direct investment in the life of settlements and introduce through case studies.

INFORMATION AND METHODOLOGICAL BACKGROUND OF THE RESEARCH

The development of the database for the research is the result of a multistage process. First, the 2017 data of the German-Hungarian Chamber of Commerce and Industry was examined regarding the number of its members. Afterwards, the seats and sites of business of the given

companies were searched and finally those with German interests were sorted out. Besides this, the member list was completed with the German enterprises having the highest revenue on the bases of data from the annually published Creditreform (HVG TOP 500). The process was similar to the former one, thus we searched the site of businesses and then those with German interest were sorted out. The settlements were classified into different levels of town collective according to the number of inhabitants assigned to the site of business. The definition of small town is not coherent even in the literature as well, thus our very first task was to define it. We had chosen the criteria of less than 30,000 inhabitants and extended it to those settlements without the status of township, which are affected by the enterprises. Thus, involving altogether 74 settlements into the research. Újhartyán, as the 75th element, having German relations was also included in our table as a counter example, case study along with Bonyhád. Despite its German past only one German enterprise is working in Bonyhád. Based on the previously agreed research principals the first column of the data table contains the list of the small towns having less than 30,000 inhabitants. After that the rate of German minority was assigned to these settlements from the gazetteer of KSH (Central Statistical Office) 2018. The range of activities of enterprises, the income from business taxes, the year of getting the status of town and the year of foundation of the first firm with German interest were also recorded. We also got the data about the changes in the number of employees through the databases homepages of Opten and Céginformáció. To complete the latter one, we also collected the educational data and studied its effect in relation with the firms. Besides these data we also studied the regional aspects, thus the vicinity of highways. We explored whether a “medium” town with a population of more than 30,000 inhabitants can be found within a radius of 20 km of a given settlement and weather this has any effect on the enterprises with German interests. In connection with this, we tried to explore the legal status and its role based on the examined sample. This data template was analysed with regression analysis and studied weather the presence of Germans makes the appearance of German companies more likely. The table of data was analysed using regression analysis and entering process to reveal whether there is a correlation or not between the German presence and the settling of German enterprises. Only the revenues have a significant effect on the dependent variable, but there was a conceptual mistake as the variables do not have a direct effect on employment, thus they do not influence the companies in choosing their site of business. It is interesting to study how the settling of the first company with German interest affects the companies already settled in the towns with German capital. It cannot be ignored when examining the relationships, that certain historical and economic turning points (transition, EU accession and the economic crisis of 2008)

influence the settling and intensity of German direct investment. We tried to complete the results of the mentioned methods with interviews, which have resulted in two short case studies introduced in this article. One is about a traditional small town with German minority, traditional industrial structure and unique product supply and a new small town with dominant German minority and specialized product structure. Unfortunately, we do not have the opportunity to conduct an exhaustive survey due to the lack of data service. Thus, our database was completed with the data regarding the number of employees, net revenue and the amount of the payed business tax.

German direct investment in Hungary

The background of the research has several segments. Germany as a significant product and capital exporter country of world economy – the 3rd in the world rank after the USA and China, with a share of 7.9% (MNB, 2018) - is a special segment in the economic life of Hungary. The export oriented economic development model, following the transition, was based on foreign direct investment (Juhász, 2016), in which Germany – as the number one investor of Hungary – has a key role (Wölfer, 2018). Several studies, analysing the export of foreign direct investment and the settling of German direct investment itself were published in the last decade (Kőrösi, 2009, Vápár, 2013, Juhász, 2016,). Foreign direct investment strategies and patterns have been investigated in details both in the East-Central European and post-socialist context (Estrin, Richet, & Brada, 2000; Pavlinek, 2004; Popescu, 2014; Jasiniak & Pastusiak, 2014; Hlavacek & Bal-Domaska 2016). The main findings of the dominantly economic analyses among others that a correlation – in a varying scale – can be found between the value of FDI and economic development, growth. The question of simple correlation was also completed by the issue of spatial pattern and penetration models, while works on the German FDI's impact were mainly published in the new millennium. However, no comprehensive research has been done regarding the settling of German direct investment in small towns and its cause and effects. The reason behind this study is the outstanding role of German direct investment in the economic life, which results in a unilateral economic dependence in Hungary. The relocalization of production capacities from the 2000s affected mainly the electronics industry and car manufacturing (Hunya & Sass 2006), while outsourcing had a role in the reindustrialization of the country (Barta et al., 2008). Considering its regional distribution, we can conclude that about one quarter of German direct investment in East-Central-Europe was realised in Hungary, while regarding its sectoral distribution in the Visegrád Group countries,

we can say that one quarter was invested in industry and two-thirds in the tertiary sector (DUIHK, 2017). The question of business site is also important. The business site model of Lösch (1940) should be approached from the site of supply and demand. The locally available resources and the aspect of agglomeration, as a link between the local and global levels, come to the forefront in the location theory of Porter (1996). The installation decisions interpreted in two different levels prioritise the possibility of an effective management of resources available at a micro-level (physical geographical environment, infrastructure, availability, relative position, amount of employees, qualification, local taxes and subsidies, image of site, economic environment, the already presenting enterprises, vicinity of higher educational and research and development institutions). Concerning these factors, the regression analysis is worth applying to determine the strength of correlation between the factors. There is an interesting dichotomy in the definition of small towns as economic sites of business. Two case studies introduce those parts of the settlement system, which once were small towns arranged around the former industrial activities and after the disintegration of industry tried to find their own characteristic way. At the same time and regarding the territorial characteristics an interesting pattern can be seen as nods and local cooperation can be observed.

Small town as an economic site of business

It has a basic importance to define, which small town concept to be accepted from the so many concepts made by several researchers based on settlement size (Beluszky, 1999, Tóth, 1996, Kőszegfalvi, 2004, Pirisi, 2008, Dövényi, 2009). We had chosen the 30,000 inhabitants as a value formulated by Gábor Pirisi, as it proved to be appropriate for the analysis of the characteristics of the present-day Hungarian settlement network and sizes. Pirisi studied the functional development types of small towns about the fact that these are the centres of local areas. Their importance was proved by the growing number of their functions in the middle of the 2000s – before the crisis of 2008-2009 (Pap, 2004, Pirisi, & Trócsányi, 2006). The last 30 years show that the present image of the urban network is defined by formal urbanization (Konecka-Szydlowska, Trócsányi, A., & Pirisi, 2018), which means more towns were born through an administrative way (reclassification), than what would correspond to the general expectations of a town. Out of the 346 towns, 182 had got its rank after the political transition, thus their number doubled, but at the same time this meant that most of them could not meet the basic functions of a town. They are rather the emitters of employees than the attractors, though it is a criterion of towns in the regulation of town declarations. So, it is an interesting question how a small town can attract a bigger firm (of course together with many smaller ones)

and to concentrate the labour force and how it affects the settlement itself and its agglomeration. All these can be compared with the possibility of the attracting force of inhabitants with German past and what kind of relations can be observed. The chosen size category is confirmed by the fact that with the town rank the number of inhabitants constantly decreased and finally went under 5,000, thus the share of small towns within the town network has increased. The question is, how they can increase their importance within the studied economy. This, through the already mentioned historical and traditional German-Hungarian relationships, should be studied considering the intensive German influence. Besides this, following the dissolution of the Soviet Union and the end of commercial relationships, the Hungarian market and enterprises had to change and meet the requirements of the West. Earlier there can be found two bigger categories of towns: those which were awarded the town rank before 1970, fulfil the requirements of functional aspects, have agglomeration and within it an employment agglomeration and have a higher number of inhabitants. The socialist industrial development added several towns to the urban network, which were the results of a forced (industrial) urban development. In these towns, there was a need for a structural change after the political transition. Among them, we can find some of those studied towns, which have less than 30,000 inhabitants. Several authors dealt with the introduction of a small town as a site for business. In the case of the former industrial towns, which had lost their functions we can find many comparative articles, based on the former and present installation factors (Pirisi & Sókuti, 2013, Molnár & Lengyel, 2015, Lovász & Pirisi, 2017). It is an outstandingly important field of questions as the Hungarian industry is integrated in the global production network and the opportunity of moving forward lies in turning towards sectors with higher added-value (Lux, 2013). The effect of reindustrialization on settlements in a lower hierarchy level is another interesting question. How the appearance of shared service functions has changed the priority order of the settling down of sectors related to the traditional branches of industry with higher added-value and expertise? In today's globalised world and in a transitional country like Hungary, the accessibility of settlements as business sites is of basic importance in order to place the elements of settlement network into a hierarchy. The western borderland of Hungary has been in a more advantageous situation after 1990, but with the expansion of its expressways and highways many settlements gained also favourable positions, more advantageous than it would be on the bases of their geographical position, though many were excluded as well. Small settlements, which otherwise would belong to the shrinking majority (Pirisi, & Trócsányi, 2015), appeared on the map of enterprises searching for business sites.

The effects of German minority on investments

Our research done by regression analysis and the summary of the available statistical database has provided an interesting outcome. The number of employees and businesses of companies with German interest had an outstanding role in both types of research methods. With the help of the former one we can define the range of dimensions, while the latter one meant the dependent variable in the regression analysis.

Geographical location of the German minority in Hungary

After selecting the companies with German interest from the database, we have gained an easily interpretable spatial image, on which the bigger cities and the county seats outstand and besides the territories with German presence the settlements of the Great Hungarian Plain and Northern Hungary are also represented as the elements of dependent economy. The capital and its agglomeration are over-represented in contrast with the other studied settlements, thanks to their central situation and their installation factors.

The inflow of German direct investment to Hungary had more waves and with different intensity. Its first wave arrived before the political transition and was incorporated into the traditional economic sectors in the form of wage work. The period from the first half of the 1990s was the period of privatization, the era of brown- and greenfield projects, when the German direct investment as a solution had arrived. In this period the informal relationships, the German language knowledge, and the competence of the employees were important, it meant a bases for working morale. The period of recovery following the economic crisis meant the third big change, the rapid inflow and intensive presence of German direct investment can be observed during reindustrialization. It gained significant role both in the dependent economy and in the shared service function thanks to its supplier network. The higher added-value segments came to the forefront (specialized expertise, high level informatics knowledge) and the foreign direct investment is internationalized (the business language is English, the German language knowledge does not mean any advantage).

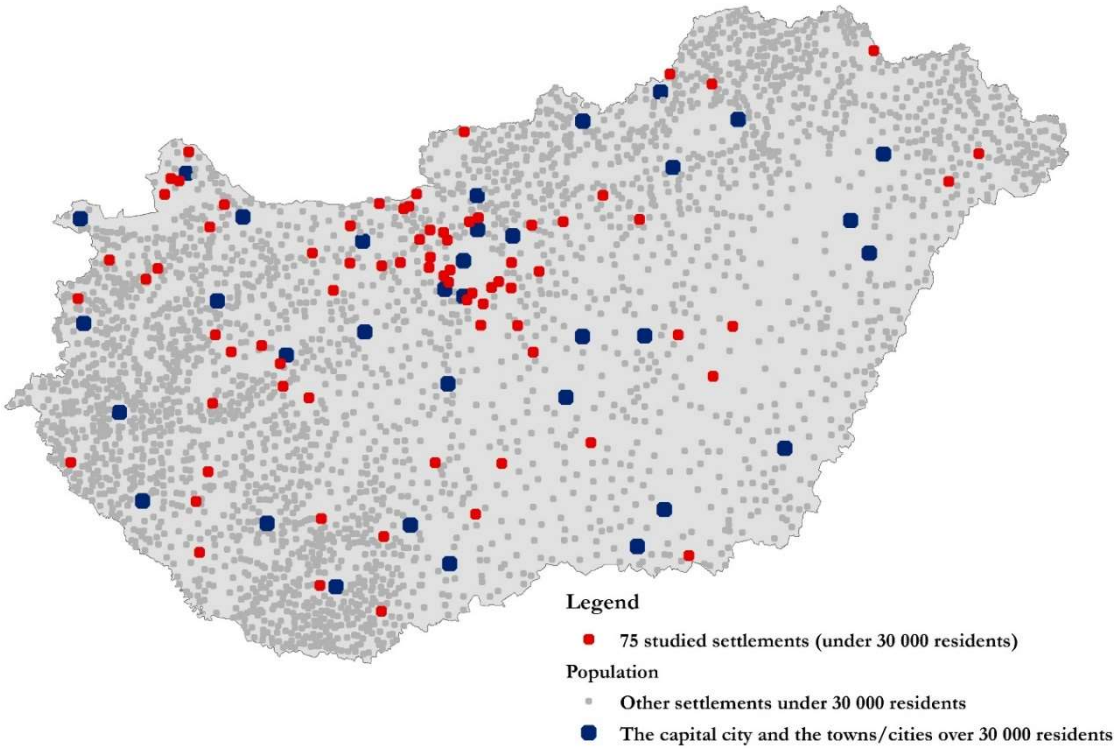
As we take a closer look at small towns, the traditionally German inhabited areas in Transdanubia stand out, just like those near the western borderline. Many small towns from the agglomeration area of the capital are presented, from which those who gained the town rank in the middle of the 2000s have an advantage as not only the presence of minority has a positive effect on the settling of direct investment, but also their advantageous position. Considering the historical background, belonging to a nationality is quite a specific question for the minorities living in Hungary, thus these statistical data should be handled carefully. According to the 2018

data of the gazetteer of KSH (Central Statistical Office) the settlements, where the ratio of minority in relation to the population ranges between 0.3% and 0.5%, are sparsely located within the country, mostly in Transdanubia, but are concentrated in the traditionally German inhabited areas. They appear isolated in the Great Hungarian Plain as a result of the political interventions. The number of settlements with 5%-25% of German minority of inhabitants with German ancestors is lower but their location is concentrated. They are the so called Schwäbische Türkei, located in Tolna and Baranya counties (Bonyhád, Bóly), plus the traditionally German settlements around the capital (Piliscsaba, Budaörs) and one town (Herend) from Veszprém county. From the studied database only two settlements (Hajós and Újhartyán – both of them are located at the Great Hungarian Plain) with less than 30,000 inhabitants have higher than 40% of German minority.

German interests and their appearance in the Hungarian network of small towns

The number of employees, the revenues or the amount of corporate or business taxes are the indicators of the size of companies. On the basis of the former one, four categories can be separated. The micro-enterprises (having less than 10 employees) are dominant around Budapest. The small enterprises (10 to 50 employees) with their commercial and logistic role are mainly present in the agglomeration of Budapest, though they continue the traditional productive activities in rural small towns (Bonyhád, Bóly, Herend). The medium enterprises (50 to 250 employees), which are the bases of the well-known multinational companies (Koch, Zentis, Haribo, Sio-Eckes) in Hungary, had chosen their sites of business in small towns and most of them are engaged in food industry. According to the available data the large enterprises are quite prominent among the firms with German interest. The smaller ones are mainly attached to traditional sectors (machine tool manufacturing industry), along with which the highly specialized, higher added value activities gained ground (lenses, nanoperm, innovative plugging). Their sites are in the settlements which have got the town rank before 2000. The medium sized large enterprises (500-999 employees) are strengthening the economy of the newer small towns. As suppliers, their sectoral structure is attached to car manufacturing, the leading sector in Hungary (engineering, electronics, ventilator, engine). The sectoral spectrum of large enterprises with more than 1,000 employees is diverse regarding the industry (tires, electronic moving parts, industrial robots), the retail market and logistics. Considering their spatial situation, the agglomeration around the capital is outstanding in the case of retail trade, while in the case of secondary sectors the settlements with industrial past are also represented (Sátoraljaújhely).

Figure 1 The German enterprises in the small towns



Source: Ed.: Karsai, V. based on available database (Creditreform.hu, DUIHK member directory)

RESULTS

Results of the regression analysis

With the regression analysis we aimed to show if there is any correlation between the presence of German population and the number of firms with German interest in a given settlement. A simple part of this is the so-called correlation coefficient, which we also studied, and it revealed that there is a correlation between the number of firms with German interest and the employees.

In the present analysis, with the use of linear regression, we had studied how the different factors – relevant according to the literature and the results of primer research – influence the number of German enterprises in the given settlements[26]. Besides theoretical considerations, the availability of data as well as the indicators to be quantifiable for most of the settlements had a key role in selecting the range of independent variables. In order to avoid multicollinearity we only used those variables in the model, which correlation did not exceed 0.7. Thus, the independent variables included the ratio of German population, the presence of German enterprises (the duration of operation of the currently existing German firms in years), number

[26] Budapest was excluded from the present study.

of towns with more than 30,000 inhabitants within a radius of 40 kilometres around the given settlement, the amount of business tax, the number of qualified employees and the length of the shortest route in kilometres until a highway junction. We had used the most recent data. The model proved to be relevant on the basis of F-test[27], the value of the coefficient of multiple determination was 0.276, while the values of adjusted R-squared was 0.211. The presence of German enterprises, the number of towns with more than 30,000 inhabitants within a radius of 40 kilometres and the number of qualified employees had a statistical significance at 0.05. Among these variables the presence of German enterprises and the number of qualified workforce proved to be stronger on the basis of standardized beta coefficients (Tab 1).

Table 1 The standardized beta coefficients, significance and T-probe of values included in the model

Name of variable	Standardized beta coefficients	Value of T-probe	Significance
Constants	-	,064	,949
Ratio of German minority	,029	,266	,791
Presence of German enterprises	,331	3,129	,003
Number of towns with more than 30,000 inhabitants within a radius of 40 kilometres	,236	2,052	,044
Amount of business tax	-,092	-,773	,442
Number of qualified employees	,307	2,642	,010
Length of the shortest route in kilometres until a highway junction	-,067	-,583	,562

Source: Ed.: Alpek, L. 2019.

The ratio of German minority as the soft-element in our assumption does not proved to be significant. The reasons behind are varied as the waves of German direct investments has had different characteristics since the period following the economic crisis. With the emergence of internationalization and shared services the significance of German minority does not play a crucial role in choosing the site of business.

Case studies of small towns: Bonyhád and Újhartyán

This has been proven by our two case studies as well, which were prepared on the bases of results from online questionnaires and guided interviews. Bonyhád is an “old” small town on

[27] Value of F-probe is 4.258, significant at 0.01 statistical significance, sig.=0.001.

the neighbourhood of Tolna and Baranya counties, which gained its town rank in 1977. It is one of the bases of German minority, the ratio of German nationality in relation to the population is 15% (KSH 2018). 10 out of 14 sent questionnaires were filled out. Within the town, four companies with German interest were operating. During the interviews we had questions regarding their reasons of site selection (J. Stefán, K. 2018) and the importance of German minority in the life of the settlement and the company. The German enterprises in small towns modernized traditional sectors and become the suppliers of leading sectors (mainly car manufacturing), and the part of dependent economy. Almost all of them are medium sized enterprises, which have settled in Bonyhád at the end of the 1990s and the beginning of the 2000s. During this time the number of expertise, the German language knowledge and the informal relationships were installation factors. In the case of more than half of the present companies' family relations and friendships helped the decision making. The taking of German nationality is exemplary in the town as the public spaces, the playground, the beach had all been renewed with the help of German capital and the support of events is continuous. Újhartyán acts as a counter example. It got the town rank in 2013, and is located in the southern part of Pest county, at the outskirts of the capital's agglomeration. The ratio of German population is 40% (KSH, 2018), though the first German investor only appeared in 2019, while other foreign investors (Japanese, American, Swiss) have been present since the establishment of the industrial park. The enterprises questioned (22 questionnaires, eight online questionnaires and three interviews) all agreed that the business site provided by the industrial park is an installation factor due to its accessibility (next to the M5 highway), the number of available workforce and the affordable tax rates. The ratio of employees with tertiary education is around 10%, but high-level English knowledge is a must. Only the small and medium size enterprises practice the corporate social responsibility (by sponsoring events), the multinational enterprises do not take part in it, though they are open to cooperate.

CONCLUSIONS

Though, the questionnaires and the interviews proved our assumption – the presence of German minority is an advantage during the selection of business sites – to be honest, the pure statistical analysis with the regression analysis disproved it. Therefore, it is only partially verified. The reasons include the historical background, the subjectivity of taking on nationality and the role of milestones in Hungarian economic life. There is a dichotomy when it comes to the effects of German minority on the settling of foreign direct investment as the relation was disproved by statistics. However, the interviews revealed that after the transition and privatisation and with the informal relations becoming formal the German direct investment helped the economic

restoration of the settlements with significant German minority. The activities related to the traditional sectors are going to live on and as the suppliers of main economic sectors they contribute to the productions of higher value-added products. The foreign enterprises moving to settlements assigned newly with the rank of a town choose their business sites on the bases of existent adequate infrastructure, existent human resources and the number of already settled companies. These are the priority factors; all the other factors are tasks to solve. The map, drawn based on the available database, highlights the settlements around the capital, mainly because of their infrastructure. Though, the economic activity revived with the help of German capital features several small towns on the map, which emerge along the western boundaries, in Tolna and Baranya counties, near the eastern and northeastern boundaries and in the middle of the Great Hungarian Plain. As a result of the development of supplier network and the strong influence of dependent economy, mainly the settlements, which have been awarded by the town rank in the near past (economic crisis of the late 2000s), in the agglomeration of Budapest are the bases. These settlements have investors mainly in the fields of logistics, services and transportation. There is a special relationship, the small town with multinational company, which is worth mentioning. It results in a strong unilateral dependence and the profile includes a very specific production. The settlements listed in our database and the accompanying companies with German interest have a completely different motivation. On the one hand tradition – both in the cases of economic activity and the presence of direct investment – and the skilled human capital, which is a good basis for an enterprise stands, while on the other hand the expertise representing higher added-value and the infrastructure appears.

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Appendices

During the interviews with enterprises, we sought answers to the incentive factors of establishment, and the binding to minority presence

1. What kind of ownership structure does the company have?
2. Year of the company's foundation
3. Number of employees
4. How long has been working at this site/location?
5. Is it a newly created area or a brownfield investment?
6. Is your company affiliated with a franchise network?
7. Does your company function as a part of an international group of companies?
8. Which factors played significant a role in setting up your company?

a) business-friendly local politics	1	2	3	4
b) qualified workers	1	2	3	4
c) predictable economic environment	1	2	3	4
d) friendly or informal working environment	1	2	3	4
e) developed of technical infrastructure	1	2	3	4
f) accessibility	1	2	3	4
g) sales markets	1	2	3	4
h) adequate in size and good location	1	2	3	4
i) other reasons/factors	1	2	3	4

9. What qualifications do employees have (qualified, skilled worker, high school, university)?
10. What is the average salary of the employees?
11. What benefits do you receive in addition to your salary?
12. Do you consider it important to train your employees?
13. Does your supplier network work with domestic or foreign suppliers? What is the proportion of the domestic supplier?
14. Are you producing for the domestic or foreign sales market?
15. Has a strong national presence influenced the choice of location?
16. What are the short-term and long-term plans of the company? Do you plan to expand your capacity? Do you plan on technological development? Do you plan to move? Do you plan to expand your market?

CREDITORS' SETTLEMENT OR WHEN IS IT ADVISABLE TO DEVIATE FROM THE ABSOLUTE PRIORITY RULE

CSŐDEGYEZSÉG – AVAGY MIKOR AJÁNLOTT AZ ABSZOLÚT ELSŐBBSÉGI SZABÁLYTÓL VALÓ ELTÉRÉS

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Abstract

Bankruptcies carry important information for the market. Bankruptcy rules in crisis become even more relevant since the reason of insolvency then is often not caused by the company's failure or inefficiency, but by external impacts like chain debts or the loosing of markets. So it happened in 2008 too. The balancing in the bankruptcy rules in these cases should be designed to guarantee the return of the expectations developed by the interested parties – debtors and creditors – at the time of the investment. This is the way to protect the trust of the participants in the financial markets and in the businesses. Despite many amendments the efficiency of these bankruptcy rules in Hungary, however, is not very promising. The country is ranked in the 24th place out of the 28 Member States in the EU in a World Bank survey in 2018, in which the efficiency of the solutions to the problem of insolvency was compared.

This study summarizes the results of a primary research which investigated that, although the Hungarian rules are seemingly in line with the international and regional standards and the EU regulations in reorganization matters, why is there, however, no such efficient capital allocation as it should be expected by the investors and would be necessary to reinforce the trust in the market.

The main statement of the article is that the Hungarian bankruptcy rules fail to promote the efficient capital allocation because the stakeholders have no information or are not interested – for the costs may be too high – in those financial data or parameters, which are necessary for a deliberated settlement in a bankruptcy procedure.

Keywords: bankruptcy, creditors' settlement, efficient breach of contract, Central and Eastern Europe, EU, Hungary

Absztrakt

Minden csőd fontos információ a piacnak. A válságok idején azonban az ilyen információ még fontosabb, hiszen a fizetésképtelenség oka ilyenkor sok esetben nem a vállalati értékteremtés hiánya, hanem külső okok, mint például a lánctartozás vagy átmeneti piacvesztés. Jó példa a 2008-as pénzügyi világválság. A fizetésképtelenség szabályozása terén a verseny azért folyik, hogy egy országban olyan hitelezővédelem alakuljon ki, amely megfelel az érdekeltek – adósok és hitelezők – befektetéskori várakozásainak. Így lehet megőrizni a globális térben a tőkepiaci és üzleti szereplők bizalmát. Ebben a versenyben Magyarország, egy 2018-as világbanki besorolás szerint, az EU-ban a fizetésképtelenség problémájának megoldásában a 28 országgal összehasonlítva a 24. helyen van.

Ez a tanulmány egy primer kutatás tapasztalatait összegezve azt vizsgálja, hogy mi a magyarázata annak, hogy bár a csődtörvény módosításai Magyarországon láthatóan követték a nemzetközi valamint a regionális trendeket és az EU rendeleteket, a pénzügyi nehézségekkel küzdő vállalkozások esetében a kínált megoldások nem vezettek olyan hatékony tőkeallokációs döntésekhez, amelyek megfelelő hitelezővédelmet biztosítanának, és ezen keresztül erősítenék a tőkepiaci és üzleti szereplők bizalmát.

A tanulmány fő megállapítása, hogy a jelenlegi csődszabályok erre nem alkalmasak. A szereplők nem ismerik vagy nem érdekük megismerni – mert esetleg túl magasak a költségek – azokat a pénzügyi kritériumokat, amelyek szükségesek egy a továbbműködést támogató egyezségi döntéshez.

Keywords: csődeljárás, csődegyezség, szerződésszegés, Közép-Kelet-Európa, EU, Magyarország

INTRODUCTION

Absolute priority rule (APR) enables the secured creditors to receive full compensation (absolute) whereas others in the queue may receive nothing (priority), because the debtor's assets do not provide enough coverage. This rule is to yield more credit for debtors by lowering the secured creditors' risk. Critics of the APR emphasise that secured creditors are not motivated to negotiate the reorganisation with non-secured creditors for a further operation of the company even if it were more efficient than final liquidation.

For avoiding the high transaction costs most of the legal orders in Europe render provisions against APR, the so called carve-out regulations. These regulations separate the debtors' assets and constrain the effectivity of the APR only partially.

The application of these rules become even more complex in case of crisis where bankruptcy is not necessarily the result of the inefficient activity of a company. In the crisis of the 1990s a more malleable system of reorganisation was promoted everywhere. The lesson has been learned from several cases, like the General Motors, Chrysler cases. The assets of a company is the most valuable in its entirety, in its producing capacity, and any piecemeal sales of it would just generate more losses (Goolsbee & Krueger 2015). Reorganisation, especially early and possibly quick reorganisation (or a pre-pack) is a crucial issue in the procedure. Yet, if the procedure is to be so quick it may not be transparent enough and so the debtors in possession, like the management or the owners, may enrich themselves at the expense of other stakeholders not equipped with the needed information. Out of this fear there are basically no pre-pack rules in Central and Eastern Europe (McCormack et al. 2016). Swiftness is important though, because the loss of the good-will of a company in bankruptcy is extremely detrimental, which extends to further losses: the loss of customers, the loss of trained employees and loss of taxes for the local authorities.

This tendency to promote reorganisation as opposed to liquidation was reinforced during the global crisis of 2008. In a financial crisis, due to the chain debts or debt-queues, many companies end up in insolvency despite their long-term viability or otherwise value-producing activity in a longer period of time. These companies therefore need to be allowed to settle with their creditors and be able to restructure their debts.

A World Bank Study of 2010 analysed the effectiveness of the reorganisation rules of the various countries during the crisis (Cirmizi, Klapper, & Uttamchandani, 2010). The number of the reorganisation procedures soared all over the world in 2008. There were 13.306 reorganisations in Japan meaning 49% more cases than in 2008 (Teikoku Databank, 2010). This number is 94.135, (5.88%) in Great Britain and 32.687 (11%) in Germany. In the meantime, however, the volume of the debt doubled. In the USA there were 60.837 reorganisation procedures in 2008, which showed 40% growth.

These numbers in the EU were not so high since the companies received 8.3% state aid in 2009 (Temporary Framework 2008), thus only 6% of the financially distressed companies filed for bankruptcy. The highest rate of bankruptcy 9.9% was that of Hungary (Correa & Iootty 2010).

The following study summarizes the results of a primary research conducted between 2009 and 2014. The question was that, although the Hungarian rules are seemingly in line with the international standards in reorganization matters, why is there no such efficient capital allocation as it should be expected by the investors and would be necessary to reinforce the trust in the market.

REORGANISATION AND SETTLEMENT V. LIQUIDATION / THE REASON FOR AN ABSOLUTE PRIORITY RULE

Reorganisation in the global crisis

The institution of reorganisation is a child of the late 19th century economic crisis and its inefficient bankruptcy procedures. From this point of view, bankruptcy is a natural element in the life-cycles of capitalism. The creditors and the debtors in a bankruptcy procedure are supposed to cooperate efficiently thereby letting the economy grow.

In a crisis, however, this may not go easily, so special advisors to the World Bank in the East-Asian crisis of the 1990s, suggested the introduction of the "super Chapter 11" (Miller & Stiglitz 1999). This was supposed to be a cure as a necessary macroeconomic shock-therapy. The aim of the "super Chapter 11" was in fact not to liquidate the financially distressed but otherwise viable companies but to motivate the creditors and debtors to settle, since individual negotiations in a crisis is costlier and difficult especially because of the inevitable rise of the free riding problem. If some creditors write off enough debts, then some others would not need so. Yet, by the force of the law the negotiations become cheaper and certain. This method however, comes at a price: contracts need to be renegotiated.

As a result, the "super Chapter 11" helped in the crisis management in East-Asia because liquidation was not automatic and many companies could survive. Yet, it was also true, that several unviable companies could carry on for too long with their businesses even after the crisis (Claessens & Laeven 2005).

Notwithstanding, "super Chapter 11" was certainly tainted with moral hazard (Miller & Stiglitz 1999)[28], since this crisis management necessarily protects those directors and owners who were first to be blamed for the coming about of the crisis itself (Demirguc, Laeven, & Levine, 2009). Some argued, that albeit it is not fair, this might persuade the creditors to calculate this sort of risk. This then would raise the interest rates for all though (Klapper, Laeven, & Rajan, 2006). Others show, that one of the criteria of economic growth is to liquidate ailing companies. Certainly, when innovation increases in a sector, then the general survival rate decreases among the companies. The actual exit of the inefficient companies from the market pushes the remaining ones to be more efficient.

Despite the fact that, seemingly, there is no consent among the academics whether or not the enhancement of reorganisation is necessary, it is true that most EU Member States have more malleable rules on bankruptcy cases than used to have. These reforms are all to impede the liquidation of still productive companies and to let non-producing companies exit as soon as possible. To reduce the costs of a bankruptcy procedure is good for the creditors, and a settlement between the creditors and the debtors may ameliorate the financial situation of the company. The experiences of the global financial crisis in 2008 are analogous with those of the East-Asian and Latin-American ones in the 1990s.

When is it financially rational for the debtors and the creditors to make a settlement?

Financially distressed companies may choose between liquidation (exit) and bankruptcy (reorganisation). Such a choice is effective when the costs and the expectations are freely deliberated. Such a decision, in a perfect market, is effective when the company ends up in reorganisation because it is capable to create profit.

The still generally used criteria for how to make a settlement in a perfect market was defined by Haugen and Senbet (1978) 40 years ago. Under such circumstances creditors, debtors and/or the owners have exactly the same and all-encompassing information as to what kind of

[28] "This limit on the unanticipated transfers to the creditor could prevent industrial collapse in the borrowing country, but it raises the concerns of equity, specifically the fairness of changing the rules in mid-stream. To some degree, these claims may be outweighed by the greater imperative of maintaining production in the crisis. But "the rules" themselves are inherently ambiguous in the midst of a situation that neither party to the contract explicitly agreed upon or even envisioned.

capabilities of an ailing company has in the near future. If it has, a settlement will naturally be an economically sound one. Thus, both groups of the stakeholders in the company, the debtors and the creditors, would calculate with the same information: if the liquidation value (VL) of the company is smaller than the operating value (VC) then the company should be reorganised, otherwise the company is to be liquidated. The main requirement is that no creditor should be in a worse position to restructure than he would be in a liquidation.

Table 1 The efficiency of the decision on settlement in both cases: economic efficiency and cooperation (coalition) efficiency if access to information is perfectly open

Efficient decision on settlement	economic efficiency	cooperation (coalition) efficiency
	Criteria	
	$V_C - V_L > R$	$V_C > (1\text{-}s)D + R$
settlement for reorganisation if both criteria are met	If $V_L = (1\text{-}s)D$ then $V_C > V_L + R = (1\text{-}s)D + R$ And	
	$V_C > V_L + R$	$V_C > (1\text{-}s)D + R$

Sources: according to White (1983); Ábel (1991)
Note: R= costs of reorganisation, s = the (percentage) share of the amount written off by the creditors

In practice, however, the decisions are often distorted by information asymmetry therefore there is a potential risk that value destructing companies operate further based on a credit restructuring settlement, or else a still value producing company is liquidated.

The rules however, may change the behaviour in a non-perfect market. Yet, the question, which party has less or more information, depends not only on the regulations. The interpretation of the various data requires more expertise. There has been a tendency that the shareholders and the management is more likely to choose reorganisation even if liquidation were more efficient due to the complex problem of costs and principal-agent questions. Owners and/or the management may keep their position and push the costs on to the creditors. Since information is not equally available, owners may ameliorate their financial position at the expense of the creditors. Shareholders vote for projects which they otherwise would not support if creditors would not finance them. On the other hand, the management is also interested in keeping its status so it advocates even risky investments in order to avoid bankruptcy. Therefore, creditors in defence wish to push the costs of the management to the owners. In these cases if the creditors write off certain claims, the debtor may be able to stabilise the company and restructure the debt (VL = (1-s)D).

To solve the information asymmetry problems, some support the swift sale of the ailing company on the open market and the immediate compensation of the creditors according to the absolute priority rule (Eckbo & Thorburn 2009). The residuum will be distributed to the owners, if any (VL – D). The new owners then are the best fit to have a full informed decision on what to do with the company (this is like the Swedish mandatory auction bankruptcy procedure).

The whole debate on liquidation or reorganisation has finally been erased by the global financial crisis of 2008. Although there are many newer ideas for the efficiency of the reorganisations, the basic notion as described is still fundamental.

When is it legally advisable to deviate from the APR?

Bankruptcy laws are to enforce contracts from a strict legal point of view. Promises have to be fulfilled, if not, there are consequences. However, the idea of an efficient breach of contract is recognized ever since Justice Holmes said "the promise was to be no more than a prediction, that one must pay damages if broke his promise" (Holmes 1897). So, it can be argued, that foreseeability and prediction is salient and the access to information is by far the most important issue.

Yet, information is not equally distributed among the interested parties. Secured creditors are always better informed than the non-secured (generally commercial) creditors, the employees or the other stakeholders. Besides, although owners, shareholders, investors or creditors of the company risk their wealth, they basically have no, or much less, information about the companies' future than the directors have, because they have chosen not to have (daily) access to it. Their agents are the directors who, however, tend to have inherently different, often rather short-term, interests; therefore, directors owe special duty, the fiduciary duty, towards the company (i.e. agency problem). Hence the company laws and bankruptcy laws grant different rights to the owners (shareholders) to control the directors. The most important of those are the various obligations of the directors for disclosures, such as financial statements, balance sheets, convening the general meeting if the registered capital decreases, etc.

Early information, therefore is extremely precious. Already the threat of a compulsory disclosure could prevent certain bad investments, compelling the management to argue and deliberate. The directors' liability, the fiduciary duty (duty of care and duty of loyalty) also serve this purpose. Early information could preclude possible frauds, void contracts, like

fraudulent conveyance, such as siphoning off the assets from the company, or other voidable contracts, such as illegally promoting certain creditors at the expense of others.

So, the basic question of bankruptcy laws is who among the interested parties can get information, *when* and *to what extent* so that to make the necessary decisions. And then what measures could be used.

The interested parties in bankruptcy procedures are extremely diverse and in case the company is in the vicinity of bankruptcy, the stakeholders' roles often change. In the European legal regime, the directors cease to be liable only to the company. In some countries, among them Hungary, already the threat of bankruptcy causes the directors to be liable to the creditors rather, than to the company. So, the law in paper provides for an early information to the creditors. After filing for bankruptcy, often they are even replaced or at least supervised by an appointee of the court. By contrast in US common law the debtor could remain in position (DIP = debtor in possession) and there is no automatic stay, which means that the directors can continue the business and the creditors are barred from rushing to collect. Creditors may, of course, sue afterwards but the assets of the company are not to be frozen in the USA. Generally, the opposite is true in Europe.

This is an important difference. If the creditors are not stopped from collecting after filing bankruptcy, then, instead of a possible reorganisation of an otherwise viable company, the firm may end up in liquidation: the company is not protected from its creditors.

This is even more so when the APR applies. Secured creditors (senior creditors) with absolute priority contracts are first to be satisfied 100% (in Germany or Sweden) or less (in France) but still in first place (McCormack et al. 2016). More often than not, bank loans are secured contracts, whereas commercial loans are not. Unsecured creditors (junior creditors) are at the rear of the queue, way after employees, tax authorities, landlords, etc. They therefore are not very likely to be able to collect. Hence, they have an interest in reorganisation rather than liquidation, but they have less bargaining power. The outcomes of the laws giving them voting power in a reorganisation plan vary according to the diversity of the stakeholders.

Creditors are ranked, because transactions have prices. The contracting parties may decide how expensive their contracts should be. A secured contract is not at all cheap to draft. The parties (creditors definitely) think the risk is so high that it is worth investing more in drawing up such a contract. The use of standard terms can nevertheless reduce costs. Unsecured contracts are on the other hand cheap and quick contracts; parties feel they are not worth the trouble. The longer the time that elapses between the formation and the performance of the contract, the more likely it is for the parties to require certain securities.

If creditors are ranked, the classes – into which they are grouped for the purposes of bankruptcy procedures – gain significance. However, if there can be no negotiations about the APR among the creditors, then there is no motivation for the unsecured creditors to approve a reorganisation plan when the company has not enough assets, so again the company faces liquidation instead of reorganisation. Unsecured creditors suffer more of capital insufficiency and information asymmetry, hence a quick partial pay-back is often more crucial for their survival than a lengthy waiting time for a possible more. If the APR may be bargained over, meaning that the secured classes may waive their absolute right for priority satisfaction, then it is more likely that the various classes of creditors will be interested in a possible reorganisation plan with a greater possible pay-back. Furthermore, if a creditor has to pay too high a registration charge for submitting his unsecured claim, then he will not even show up, since there is no point in throwing his money after assets held under a regime that rigidly protects other creditors' interests with APR.

The creditors' majority support is needed to achieve a settlement among the creditors. This majority support is to be based on the value of the claims in a few states in Central and Eastern Europe, e.g. in Slovakia, Bulgaria and in Hungary. In contrast, a decision on such a settlement may be supported by both the majority of the number of the creditors and also the majority based on the value of the claims in the Czech Republic, Poland and Romania.

There are plenty of external costs in the business of a company, so owners are not the ultimate risk bearers as they used to be. The limited liability of shareholders/owners and the separate legal entity of the company makes businesses legally possible at the expense of others. If a financially distressed company files for bankruptcy, the rules allocating the risks are salient, since it is obviously possible that the (remaining) assets of the company will be distributed among its shareholders.

Thus, distribution of the assets may be best prevented by the directors. They have the information on time. Therefore, civil law sanctions apply in most of the countries in Central and Eastern Europe, if directors fail to file for bankruptcy in time and so they cause damages. These are: the Czech Republic, Slovenia and Estonia. Beside civil liability however many countries introduced criminal sanctions too, like Croatia, Bulgaria, Latvia, Poland and Romania. Interestingly enough, these are only Hungary and Slovakia in Central Europe, where there are no such rules. Even more interestingly, however, in case creditors sustained losses as a result of mismanagement of the assets in the jeopardy of the bankruptcy, directors have to compensate the creditors.

In any event, the biggest problem in the continent is the nature of the liability of the directors and their not being motivated to disclose information early, because in case of bankruptcy they lose control and are removed from their positions. On the other hand, the directors of the SMEs are the owners themselves, so information is definitely at hand. In these cases, these are the creditors – secured or unsecured – who need information desperately in time.

When is it financially advisable to deviate from the APR?

A special cooperation of the creditors is needed if the coverage (the collateral security) is not enough for all the claims of an otherwise viable debtor. Such settlements mostly require the *majority*, or even the qualified majority of the creditors or of the creditors representing the majority or qualified majority of the amount of all claims. Therefore, the question is, whether the secured creditors could be motivated to settle not only with the debtor but also with other unsecured creditors, by writing off certain amount of their claims so that to inspire the unsecured creditors too to vote for the settlement. This willingness of the secured creditors to write off some of their claims can be motivated either individually by a renegotiation of the secured contract between the debtor and the creditor or generally by the power of the law. This latter could regulate that in case of a bankruptcy the coverage should not be absolute and prior, rendering APR to be unobserved *ipso iure* (the carve-out).

The assets of an ailing company are to be divided differently among the various classes of creditors if it is decided in a *reorganisation* or in a *liquidation* procedure. During liquidation it is the liquidation value (VL) of the company which is distributed and the APR is observed absolutely. By contrast, in a reorganisation procedure, more often than not, it is inevitable to deviate from the APR so that to achieve a settlement among the creditors and the debtors. The negotiations generate a kind of wealth redistribution in the sense that the debtors could keep their ownership position in the company in exchange to a revaluation of the unsecured debts at the expense of the secured ones. In other words, the secured creditors would not be paid off absolutely prior to the other unsecured creditors thereby leaving a room for manoeuvre to the company management to a restructuring and to a carrying on with the operation.

The objective of a reorganisation procedure is to focus on the further operation of the company. This means that the management still owes a fiduciary duty towards the *company*. By contrast, in a liquidation procedure the *interest of the creditors* comes forward and takes over the fiduciary duty of the management towards the company.

Depending on the bargaining positions of the creditors – and based on equal access to information for all participants –, if liquidation were more advantageous to the owners and the unsecured creditors than the reorganisation, then the secured creditors might be more motivated to negotiate for a settlement in case of a viable company. The unsecured creditors, like suppliers, are often more interested in a quick partial pay off than a lengthy waiting period of hoping for more. Therefore, the deviation from the APR is a fundamental issue in reorganisations.

The efficiency criteria show how the interest of the creditors may be protected in a settlement if one takes the decision with regard to these correlations of $V_L > V_C$ and the $V_L = (1\text{-}s)D$ as described above. This however requires the renegotiations of the existing contracts. The question is the ratio between the positive effect of the possible settlement together with the further value producing operation of the company and the costs of the breaching of the APR, i.e. the costs to get creditors with priority be involved in writing off credits (in the hope of a higher return).

A common and significant consequence of the non-observance of the APR is that the shares' pricing rules may get hurt (Senbet & Wang 2012). This discrepancy steers the behaviour of the investors (owners and creditors) as well as that of the management. Presumed, that the participants act rationally and are all well informed, and may calculate the occurring probability of the non-observance of the APR, the costs of this probable incidence will be part of the price (Eberhart & Weiss 1998). If the breach of the APR is more advantageous for the shareholders and its probability is built in their expectations, then this would generate a lower profit for them. By contrast, the secured creditors in the front of the debt queue would expect higher yield in exchange for the higher risk in this case. The real question is therefore, whether this kind of market re-pricing, due to the breach of the APR in the bankruptcy procedure of the financially distressed companies, could work for every market actor unhinged.

Beside the calculation of the occurring possibilities however, one has to focus also on the degree of these deviations from the APR. From the creditors' point of view, unless the costs of the bankruptcy are lower than the premium (surcharge) which is to cover the costs of the risk of the bankruptcy, the deviation would not have impact on the pricing of the financial products (Longhofer & Carlstrom 1995). This would practically mean, that until then, the expected yield of the creditor, or the interest rate on the loan, will not change, will not be higher and, *vice versa*, it will not be lower for the debtor. On the contrary, if the degree of the deviation would be costlier than the costs of the bankruptcy, then the interest rate of the loan would increase *ex*

ante for the creditor and the expected yield of the owner/debtor would at the same time decrease constraining thereby the investment possibilities of the company.

So, in the course of negotiation about the deviation from the APR one focuses on the optimal position of the participants of the company (Baird 2016). And no doubt, this deviation comes with a price. Obviously, the APR is a very important instrument for providing credit, therefore its breach or a renegotiation in the bankruptcy procedure will have even ex ante impact on the financing costs of the company.

Truly a deviation from the APR may result in a positively effective reallocation of company assets so that the shareholders keep their investment in the restructured company, the creditors undertake the refinancing and the strategic suppliers (generally the non-secured creditors) support the company as a going concern, etc. None of these potential benefits should veil the fact that any deviation from the APR comes at a price which is to be calculated at the time of deciding on the creditors' settlement.

Therefore, a settlement for reorganisation – and thereby a deviation from the APR – is to be supported unless and until the degree of the deviation would result in a pricing change of the value producing companies in the financial markets (at the expense of the minority shareholders in the ailing companies).

THE CASE OF THE HUNGARIAN PRIMARY RESEARCH 2009-2017

Hungarian bankruptcy amendments and the data of the empirical research

These were also the salient questions of the primary research carried out after the global crisis in Hungary. The basic issue is that there is no clear shift in the reorganisation data after the new rules on reorganisation were introduced in 2009. Although these rules are seemingly in line with the international standards in reorganization matters (law in paper), still there is no such efficient capital allocation as should have been expected by the investors and would have been necessary to reinforce the trust in the market (law in action). Or in other words, why could not get Hungary further up to the front in the World Bank ranking?

The Act No. LI of 2009 in Hungary, amended the then existing bankruptcy rules and promoted reorganisation procedures as opposed to liquidation. But the intent to reinvigorate the institution of bankruptcy in general met only accidentally with the aim of the globally enhanced preferences. This provision was a result of a more than a decade long debate during the transition from the socialist command market to a free market. The first step, back then, was to introduce a uniquely strict automatic bankruptcy law as a response to the reluctance of the

companies to file for bankruptcy or liquidation (Act No XLIX of 1991). The rules therein on promoting automatic stay which could help creditors' settlement (collateral settlement) were withdrawn in 1993, since then companies in financial distress systemically faced liquidation. This practice was to be changed to promote reorganisation in 2009 again (Act No. LI of 2009). The priority of the reorganisation procedure over liquidation was declared anew, an automatic stay rule (immediate moratorium) was reintroduced.

Our primary research in 2014 provides information from (i) the Budapest–Capital Regional Court and (ii) the Amadeus database29. The Court collects data on bankruptcy and liquidation separately in addition to the records on the cases which ended with a settlement too. It has to be noted that this sample is not representative, therefore to ensure the random selecting, the Court was requested to allow us to study the cases of only one judge at the Court. Since the cases are assigned randomly among the competent judges at the Court, we recognized this as representability.

Table 2 The various filings for reorganisation at the Budapest–Capital Regional Court, depending on how they ended (2009-2014)

End of the procedure in filings for reorganisation		**Number of cases**		**% of the reorganistion filings**
		Total-pool	**Small-pool**	**Total-pool**
Settlement /Agreement		79	34	27%
Liquidation		167		58%
Refusal	**Documents not completed**	21	17	7%
	Previous iquidation	10	10	3%
	Termination of procedure	5	4	2%
Other termination		6	6	2%
Total		288	71	100%

Sources: Budapest–Capital Regional Court data

As seen in Tab. 1., out of the 332 cases 83 were closed with a creditors' settlement. The Court refused to approve the settlement in 182 cases which triggered the automatic liquidation procedure. At the time of the research, there were 288 closed reorganisation procedures and 19 still in-process, out of the 307 under scrutiny. The identification of the 97 companies was also unsuccessful in some cases: only 71 were found in Amadeus.

The question was: how did the companies with a creditors' settlement make deliberative, information-based decisions for an effective reallocation of the company assets capable to further operation. The scrutiny was two pronged: firstly, based on historic parameters, we

[29] https://amadeus.bvdep.com/

analysed the companies' value producing capability, and their debt leverage (indebtedness) as well as the legal reason for the filing for a bankruptcy and their liquidity problems. Secondly, based on future expectations, we studied the value-producing reorganisation plans of these companies at the Court.

The historic data indispensable in our research for these companies are not listed in the stock markets. 288 companies were identified in the Amadeus Database, out of the 332 having filed for bankruptcy at the Court, and so had their financial statements and balance sheets available providing us the chance to investigate the necessary company data during the years before the filing the petition with the Court. According to our working hypothesis, and lacking market information, those companies were to have the capacity to make profit, which had been capable to do that earlier too or at least to cover their accounting expenses out of their income. We presumed that the financial difficulties were an outside impact on them which would therefore be eliminated by credit restructuring or by managing the preliminary lack of liquidity. Even if a company was not capable to survive at first glance, it still could have the chance to reorganisation, if it had elabourated reorganisation plan to enter into a value producing phase.

Surprisingly, the historic data showed no difference in equipment effectiveness, capital leverage or liquidity of the differently positioned companies. There was absolutely no evidence of deliberating the possibility of a reorganisation plan.

A rational market participant makes decisions based on future expectations, which require a sufficient level of convincing prediction about the revitalization ability of these companies. Yet there was no reorganisation plan at all in any of these reorganisation or settlement procedures. The only issue at hand during the negotiations was the swiftest possible repayment of the creditors which, from a financial point of view, fundamentally undermines any reorganisation plan.

Clearly, the goals of the new laws on the reorganisation plan did not work. If the aim was to elaborate a plan how to re-establish the liquidity of a company for continued short-term operation with due regard to the market environment and the company's potentials, then it was plainly not working. This included the lack of plans for the collecting of receivables and the sale of assets without jeopardizing the short-term financing of operations to be continued. Neither were the portfolio services adjusted to the (new future) market expectations and the long-term financing of the company needs. Nor were there plans to ensure the resources for the restructuring company or any optimization of the capital leverage. There was simply no reorganisation plan to indicate how to reach a profitable company structure efficiently and whether to sell the assets of the company in total or piece by piece.

APR and efficient protection of the creditors

Having found this lack of deliberation we studied the parameters (on protecting creditors), the repayment rates and the validity of the APR. As for a first glance it may be fixed, that the new laws of 2009 did have an impact on the repayment rate of the creditors.

Table 3 The number of newly filed bankruptcy cases

	2008	**2010**	**2017**
Number of bankruptcy cases	2	123	39
Number of liquidation cases	9800	11269	6469
Operating and registered companies	443222	481911	529608

Sources: Budapest–Capital Regional Court data

However, one has to be cautious with this statement too, since statistically, before 2009 there had been only a very few cases of bankruptcy procedures. Again, basically, this has been the very reason which lead to the amendment of the Act on Bankruptcy Procedures. So, the repayment rate of 1.58% registered within the liquidation procedures, soared to the 43.7% in the reorganisation procedures with settlement.

But this should come as no surprise. According to the parameters a settlement is not an alternative for a company which had reached the critical status of V=0 instead of the V=D, in which case there might be no chance of an efficient last-minute reorganisation. The majority of all companies under scrutiny had already been losing assets (V<D) before filing for bankruptcy regardless of whether they had made a settlement or were heading for liquidation. The better repayment rate shows therefore, that the chances for a reorganisation of the company is higher in a bankruptcy procedure at the time of filing for bankruptcy.

Now, let us see the validity of the APR. The key issue here is, whether and to what degree the debtor and the secured creditors could agree on the amount of the claim to be written off. In so calculating, the secured creditors define their value of contribution so that the remaining claims, (1-s)D, be equal with the liquidation value, VL, valid in the event of immediate liquidation. After the bankruptcy amendment of 2009 in Hungary, as the results of the primary research show, this calculus is as follows:

1. The observance of the APR was not to be analysed
   (i) either because there were no secured creditors at 22.58% of the companies with settlement,
   (ii) or because there were no registered unsecured creditors at 9.68% of the companies with settlement.

2. The deviation from the APR was evidenced in 54.1% of the cases of the companies with settlement: the secured creditors were not repaid in 100% but the non-secured creditors were partially repaid.
3. There was no deviation from the APR in 28.8% of the cases of the companies with settlement: the secured creditors were paid up fully, 100%.

It should be noted here, that in compliance with most of the European legal regimes, the Hungarian laws apply the carve out system too, but its degree changes too often (25%, 50%), so it is hard to compare the efficiency in this regard.

Beside the *frequency* of the deviation from the APR it is the *degree* of this deviation that matters the most. It is well established, that the salient impact on the repricing of the stock market depends rather on the degree of the deviation from the APR in proportion to the value of the company and not on the frequency of the deviation. This deviation has two-pronged influence on the companies' life. Firstly, a significant deviation from the APR impacts also the capital costs. Secondly, the deviation from the APR motivates the unsecured creditors to support the creditors' settlement in case of a viable but bankrupt company.

In addition to the benefit of the deviation from the APR, both creditor groups are repaid within an average of 260 days. This means a further actual over-preferencing of the non-secured creditors at the expense of the secured creditors. Obviously, the secured creditors could not keep their privileged status, not even in the timing of the repayment.

The aftermath of the research

The data on the repayment ratio are based on the creditors' settlements and reflect the expectations of the Court. The average of the final repayment date for all creditors, either secured or non-secured, is the 260th day calculated from the day of entering into the settlement. These results trigger a tension, an incoherence in what we have found and demonstrated in our research: if it is showed, as we did, that the settlements are usually made in an ill-informed manner by the participants of the bankruptcy procedure, then the settlement cannot serve the rational bases for the protection of the creditors. Then how to explain the ameliorating tendency of the repayment of the claims?

The following table shows the real after life of the companies with settlements (Table 4.).

Table 4 Status of companies filing for bankruptcy (2009-2014) with the Budapest–Capital Regional Court according to data registered at 2013 and checked in Amadeus

Status of companies		No /Co's with settlement in Amadeus	Rate/Co's with settlement in Amadeus	No /Co's without settlement (liquidated Co's) in Amadeus	Rate/Co's without settlement (liquidated Co's) in Amadeus	No/Co's with settlement in data collected at the Court	Rate /Co's with settlement in data collected at the Court
Active	Active	3	0.04	14	0.08	1	0.03
	Active (in insolvency proceedings)	31	0.39	34	0.20	17	0.49
	"Active" others (in liquidation, dissolved)	3	0.04	8	0.05	1	0.03
Non-active	Active (dormant)	30	0.38	-	-	13	0.37
	Bankruptcy	12	0.15	111	0.66	3	0.09
Total		79	1.00	167	1.00	35	1.00

Sources: Amadeus database and the Official Gazette

This demonstrates that nearly half (47%) of the 79 companies with settlement could survive the first 3 years following the reorganisation according to the data from the Amadeus database. Notwithstanding, the number of the companies still active after 3 years following the reorganisation is only 3. The most interesting group of companies is the "active (dormant)" category, the companies of which are registered as active in the Company Register but has no activity at all.

These data were also supported by the primary research presented above. There was only 1 company in the "active" category out of the 35 companies with settlement 3 years after the filing for bankruptcy. 37% of the companies with settlement ended up in the "active (dormant)" category. Almost half of the companies with settlement are non-operating after 1-3 years following the filing for bankruptcy.

These findings show conspicuously that the high repayment expectations in the creditors' settlements are not fulfilled. The majority of the companies with settlement become either non-operating or liquidated. This is also clear, that the new bankruptcy regulations of the global crisis grant neither an efficient reallocation in the reorganisation procedure nor a better rate of claims repayment by the deviation from the APR. These results are mirrored in the decreasing numbers of the filing for bankruptcies with the bankruptcy courts in a period between 2008 and 2017.

EFFICIENCY OF THE HUNGARIAN BANKRUPTCY RULES IN THE EU CONTEXT

The rational beyond the shift in the regulation in Hungary, was that in the case of a financially distressed company a flexible reorganisation procedure should ameliorate, complement – replace or forestall, if needed – the bankruptcy procedures resulting in liquidation. Yet, the primary research analysed in this article shows that not even the breach of the APR provides for a better environment for the settlement. Generally, all companies with such a settlement in the research ended up, after a few years, in a liquidation procedure or remained dormant in a non-active status. Thus, in Hungary, systemically, reorganisations do not set up value producing viable companies.

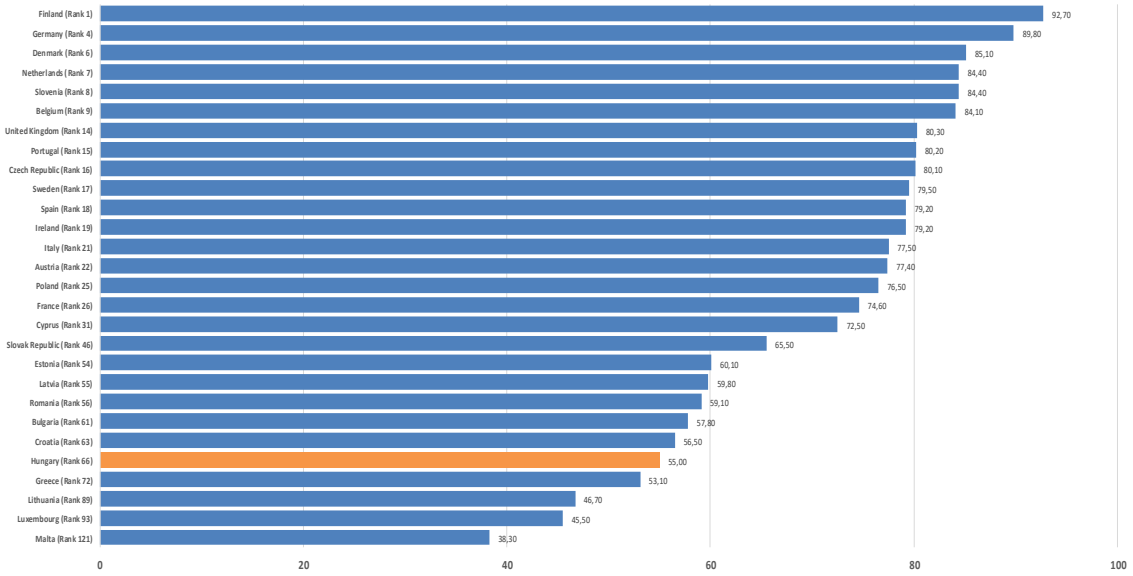
Clearly, these problems do not root in the regulations: bankruptcy laws do comply with the EU regulations and the international standards (Boon 2018; Blazy, Petey, & Weill, 2018; McCormack, 2017). The reasons for this system failure – according to the primary research, are rather (i) the structure of the financial/credit market, (ii) the overwhelming majority of the SMEs as opposed to companies listed in the stock market and (iii) the nature of the credit for the SMEs.

The Hungarian financial market is bank-based market. Market participants seldom collect money from the public through the stock market. In fact, the setting up of a public company directly in the stock market is illegal (Civil Code 3:249. §).

In our research we have found that almost half of the companies in the bankruptcy procedure lacked secured credits, which means that these companies had no bank loans at all. These debtors faced commercial creditors, consumers, tax payers or simply employees. These commercial creditors, often in financial distress themselves too, cannot make settlements, especially, because for them often there is no information in hand whatsoever. The bank-based financial markets are not too transparent, but a market full with SMEs, is even more blur. Because of the big numbers of the SMEs in the market and often because of the lack of capacity to understand financial risks from the commercial creditors' or the employees' part, the rational basis of a creditors' settlement is far from realistic.

Therefore, the amended Hungarian bankruptcy laws in compliance with the EU regulation could not guarantee a better ranking for the country. As is seen in Graph 1, the efficiency of the bankruptcy rules in Hungary provides only the 24th place among the 28 Member States, far below the EU average. Clearly, the law in paper is not what the law in action is.

Figure 1



Source: Doing Business database 2019.

CONCLUSION

The main statement of the article is that the Hungarian bankruptcy rules fail to promote the efficient capital allocation because the stakeholders have no information or are not interested – for the costs may be too high – in those financial data or parameters, which are necessary for a deliberated settlement in a bankruptcy procedure. As a last resort, the deviation from the absolute priority rule (APR) may motivate the different classes of the creditors to enter an agreement on reorganisation. Yet, the primary research analysed in this article shows that not even a deviation from the APR provides for a better environment for the settlement so that to save a value producing viable company. Generally, all companies with such a settlement in the research ended up, after some years, in a liquidation procedure or remained dormant in a non-active status.

The rules in Hungary as shown do not differ from those of other countries in the region. Yet, the results are not what are wished for. So, practically a troubled company needs to be liquidated and the creditors be paid up as soon as possible.

Since the information is hard to acquire and the actors of the bankruptcy procedure do not cooperate, even if it were better for them, the authors suggest a completely different approach and a different procedure as a solution to the problem. The aim of the rules should not be the coercion of the cooperation but the opposite: let one creditor have the chance to reorganise the company as soon and as quick as it is possible. One decision-maker could gather the necessary data and could decide swiftly. A possible procedure for this may be the automatic bankruptcy auctions as applied in the Swedish model.

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REGIONAL TRENDS – INTEGRATION CHALLENGES – VARIOUS LEGAL MODELS OF BUSINESS REGISTRATION IN THE EU MEMBER STATES AS A COMPETITIVE FACTOR

REGIONÁLIS TRENDEK – INTEGRÁCIÓS KIHÍVÁSOK – AZ EU TAGÁLLAMOK KERESKEDELMI NYILVÁNTARTÁSAINAK JOGI MODELLJE, MINT VERSENYKÉPESSÉGI TÉNYEZŐ

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Abstract

There has been a long way from the paper-based registration systems to the electronic registration platforms in the business registration models of both for-profit and non-profit organisations in the market. The company register is not only a dominant form of registration for the legal entities (organisations), it is also a crucial business factor in the economy for the commercial participants. Major challenges in the development of modern registers may be categorised as follows: enforcement of market transparency, wide application of various possibilities imminent in the electronic schemes, guarantee of an as broad access to the market as possible (enhancement of the simplest possible way to enter the market) and the follow up of the new regional trends in the integration challenges of the EU (endeavour for harmonisation and integration or linking of the company registers). Notwithstanding these efforts, there is quite a difference among the models of the commercial registers in the EU Member States.
The following article demonstrates the still existing diversification in the EU Member States by showing certain selected legal models of company registers. In analysing these divergent models, the authors wish to study and posit the Hungarian model as well within the context of the EU.

Keywords: company register, data broker, electronic registration, market transparency, access to information, harmonisation, Hungary, EU

Absztrakt

A gazdaság for-profit és non-profit szervezeteinek nyilvántartási modellje a kezdetleges, jellemzően papír alapú nyilvántartó rendszerektől látványosan nagy utat járt be napjaink elektronikus nyilvántartási platformjaiig. A jogi személyek (szervezetek) nyilvántartásában kiemelkedő jelentőségű, bizonyos értelemben „húzó" ágazatnak is nevezhető a kereskedelmi nyilvántartások alapvető fajtája, a cégnyilvántartás. A nyilvántartó rendszerek modern kori evolúciójának jellemzői: a piaci transzparencia erősítése, az elektronizáció adta lehetőségek széles körű kihasználása, a piacra lépés akadálymentesítésének igénye (a vállalkozások alapításának egyszerűsítése), és az uniós integrációs törekvésekből eredő regionális kihívások megjelenése (egységesítés, törekvés a kereskedelmi nyilvántartások összekapcsolására). Európában ugyanakkor a mai napig jelentős eltérések jellemzik a tagállamok kereskedelmi nyilvántartásait. A szerzők – néhány kiválasztott ország példáján keresztül –az Európai Unióban fellelhető model-diverzifikációt kívánják szemléltetni, elhelyezve abban a jogi személyek hazai nyilvántartásának rendszerét, a lehetséges távlatok előre vetítésének nem titkolt szándékával.

Keywords: cégnyilvántartás, adat-ügynökök, elektronikus regisztráció, piaci transzparencia, piacra lépés akadálymentesítése, harmonizáció, Magyarország, EU

INTRODUCTION

Citizens of the EU in various Member States may sit wherever they want, Cafes, kitchens, saloons or dining rooms, and could easily found a company in any of the Member States directly via the electronic interconnected business registers in the digital single market through a web portal. But not only the formation could be achieved so easily but the management, or the disclosure of necessary business information may be carried out this way which further on could be accessed by the stakeholders, interested third parties. Briefly, the business registers throughout the EU are to be accessed *directly fully on-line* both by the uploaders, such as founders and managers and by the users, namely the shareholders, service providers, employees, or other creditors and stakeholders. So, moves on the new digital phase in the saga of the interconnecting of the business registers. But not without questions though. How much information, for what and at whose costs, under how much control, ex ante or ex post control, under which Members States' governing laws etc. Even if some would doubt the practical necessity of such possibilities, one could definitely support this idea, since this is a crucial step for a *digital and single* market.

The most important issues in the development of modern registers may be categorised as follows: (i) the enforcement of market transparency, (ii) a wide application of various possibilities imminent in the electronic schemes, (iii) the guarantee of an as broad access to the market as possible (enhancement of the simplest possible way to enter the market) and (iv) the follow up of the new regional trends in the integration challenges of the EU.

The following article focuses on the fourth problem, namely on the rivalry issues of the registration models among the Member States, especially within the various regions of the EU. For, notwithstanding the efforts to interconnect the business registers and let it be used by the interested parties for a smooth operation of companies throughout the single digital market, there is still quite a difference among the models of the commercial registers in the EU Member States (Pázmándi, 2015). Competitiveness at this level, in fact, has never been the problem of the EU, but that of the Some Member States. Some states have even separate registers for the businesses, such as the different types of companies distinct from the registers of the civil organisations and foundations (Hungary). It is quite naturally not the topic of the EU, it cannot be. Also, no wonder that the interconnecting model of the EU, the BRIS (Business Registers Interconnecting System), leaves the underlying substantive national laws intact. Hence the question is whether the laws of one Member State regarding the business registers may better promote the entering into the market and informing the market than those of another Member

State in the relevant region. So, it could be a legitimate query in a completely regional context, whether the pertinent regulations in one country are better or worse equipped to this sort of task than that of any other country, for instance, in the Central European region (Fehér, 2018).

In this article we argue, that the drive to implement a better model for a business register is rather triggered by the *regional* challenges, the traditional historical and cultural roots than by the legislative acts of the EU. Besides, we argue that notwithstanding these diverging drives, the case law of the EU does counterbalance this divergency and tends to create a field of convergency in the company law realm.

THE BLACK LETTER LAWS IN THE EU

Surely, it had been a long way to harmonise the commercial registers throughout the EU (Vutt, 1998; Holzborn & Leube, 2004; Gassen, 2008). And it has been a long way until several company law directives touching upon the trustworthiness of and the access to market information were compiled into one directive in 2017. The 2017/1132 EU directive relating to certain aspects of company law recodified the sixth, the eleventh, the cross-border merger and the various third parties' safeguards directives. These directives, like any other company law directives, roughly speaking, dealt with the protection of shareholders, creditors and employees also by guarantying transparency and getting information in the market.

This directive of 2017 is however being under revision again. The major motivation for this renewal, apart from a genuine need of the swiftly changing circumstances, is the claim for a more effective single market, especially the digital single market. This process also reflects Jean-Claude Juncker's promise of a work on the European digital agenda and the digital single market expressed in his statement called the "Time for Action" presented in the European Parliament right before the vote on his policy vision, in 22 October 2014.

The latest relevant impact assessment of the European Commission relies on various comparative studies and summaries regarding the availability of digital tools for company registration and filings within the EU. Although these data embrace the models of only 14 Member States, yet representing several regions, the findings are still very intriguing. According to these studies and the impact assessment there are quite a few Member States equipped with full digital registration systems. This would guarantee that the registration process be achieved in a so called *direct end-to-end manner* (Impact Assessment, 2018, 126-127).

THE COMPETING MODELS OF THE BUSINESS REGISTERS

Thus Estonia, France, Denmark, Poland, Portugal and the UK provide for a model, which enable the founders of a company to carry out the whole registration themselves via electronic devices through a web portal. In contrast, however in Belgium, Bulgaria, Germany, Hungary, Italy, Luxembourg, the Netherlands and Romania the system relies on neither a direct nor an end-to-end procedure (Impact Assessment, 2018, 127-129). The founders of the company need to visit a designated legal professional (lawyer, attorney, or notary) with the documents-in-paper in their hands and request a process of registration. In these latter systems the market actors cannot proceed without the compulsory legal aids who have the electronic access to the relevant registers.

By contrast, at further points of the lifecycle of the company, in case of the filing and disclosure of company information, the availability of digital tools is somewhat different. France and Italy change places. Estonia, Denmark, Poland, Portugal and the UK carry on with providing for a *direct end-to-end self-service*, and so does Italy. Quite the contrary, Belgium, Bulgaria, Germany, Hungary, Luxembourg, the Netherlands and Romania sticks to the indirect rather paper-based process in the disclosure procedures of the companies. And so does France. It is a rather paper based process even if the legal aids (the lawyer, the attorney, or the notary) would upload all the required documents so that they are to be filed in an electronic way too.

THE CULTURAL AND HISTORICAL REASONS OF THE MODELS OF THE BUSINESS REGISTERS IN THE EU

Yet the difference between the two groups does not end here. Founders of a company in Estonia, for example may directly set up a company in another Member State, like Portugal, if they registered as taxpayers in Portugal. And this could be done easily via an Estonian e-ID (ID kaart). Thus whichever Member State recognizes this e-ID and has the relevant infrastructure – including the pertinent laws –, may allow this possibility for Estonian founders of a company and probably *vice versa*.

Nevertheless, this model is not widespread in the EU. Even if there are strong evidences that a fully digitalized model, including a direct access to the registers from the part of the market participants, would save a lot of money (Impact Assessment, 2018), and not only for the society in large, this model is still not in use by the majority of the countries. The reasons could be categorized in three groups: *i)* antagonism of some stakeholders, *ii)* the traditional

administrative and/or legal design of a country and *iii)* a general distrust in market (un-controlled) solutions.

As for the first reason, certainly, there are stakeholders, who are not quite motivated to follow the streamline. There are various interests beyond these oppositions of course, such as existential concerns, lack of information or fear of globalisation. The existential concerns embrace most conspicuously the notaries in countries where it is compulsory to access the registers – even if it is via web portal – through legal professionals (especially but not exclusively: Germany, Austria and Hungary). The lack of information is a profile of the less educated employees and their representatives. The trade unions could well be categorized into this stakeholders' group who do fear globalization (Feedback Statements, 2018).

Secondly, one of the fundamental obstacles to the full digitalization of the interconnected registers may be addressed as the traditional administrative and legal design. Historically the legitimacy of the state derives in most countries in the continent from the task of creating a level playing field for its market actors, businesses or any kind of legal persons. The state interference is therefore an anticipated and well accepted *quid pro quo*. This is the state that grants the legal personality to the companies. This is the state that grants thereby the gist of capitalism to the business associations: the limited liability. And so, this is the state, that grants a shield over the members of the company protecting them from the creditors. This sort of legal personality is not only recognised, it is granted (Germany, Hungary, Poland, the Czech Republic, Slovakia). This attitude promotes that type of the business registers which provides for a *constitutive* effect (like Germany, Hungary, Poland, the Czech Republic). Constitutive effect means that the registered business association is granted a separate legal entity by the deed of the state authority (let it be court, an administrative body or a business chamber) and so the founders of the company are protected by the corporate veil. Therefore, founders of the companies have to file more detailed documents for registration which are also going to be quite plausibly fact-checked. In this business environment the intervention of the state – also as the representative of the notion of the ordo-liberalism – is not suspicious but expected and trusted. The opposite regime is a business register of a rather *declarative* in nature, where the deed of registration is just a recognition. This recognition needs to be disclosed, declared. Therefore, these types of business registers require less data to be public and even if they are disclosed, they are not necessarily fact-checked (like the UK and mostly France).

The third aversion towards the digitalized interconnected model of business registers stems from the previous concern of state dominance. Naturally, this sort of tradition creates a general

distrust in a market-based solution, such as the direct access and self-service of the founders of a company in the digitalized business registers.

The deep roots of such concerns are certainly well fed by some of the fraudulent cases in the EU, in the globalised markets, to be fair. The notaries and the trade unions may argue on firm grounds that the uncontrolled registrations provide an easy way to set up phony letter box companies. Or rather shell companies because the former may be legal, the latter may not (Hastings & Cremers, 2018). In these cases, the argument goes, the employees and the creditors are much more vulnerable. Further problems are triggered by the money-laundering regulations which require personal face-to-face identification in certain legal regimes.

The answer to this sort of concerns is not an easy one. Firstly, an easy access of the stakeholders to the salient disclosures of a company may counterbalance the fear from lack of administrative control. Yet, the degree of disclosed information, for free or not, could still be another issue to ponder upon. The basic available data are not always telling. The registers with the rather declaratory effect are much less informative, than the registers with the constitutive effect. It is not a negligible question, for instance, whether the director of a given company has full capacity to act alone or not. It may need clarification, especially in the internal market, where the underlying laws of the Member States may differ, whether the decisions of the sole director of the company needs approval of an elected employee or not. On the other hand, if the data are public the problem of data protection occurs. The recent issues of the merchandising of the data in the digitalized worlds leave many concerns unsolved (Crain, 2018). What information is being dissolved about someone, to whom? How to trust when sharing information (Marwick & Hargittai, 2019) and how to regulate the data brokers, if needed.

Secondly, and quite interestingly, the supervisory procedure is not of help. The supervision system of the registration, may it be so diverse as it is, has no role at all in the effectivity of the business model. Truly, the control over business registration is swifter and more efficient in some Member States than in the other ones but not due to the surveillance system. Hence, this may not necessarily mean that a system of company registers overseen by a court is better or worse. Countries with a court supervision are like Austria, Belgium, the Czech Republic, France, Germany, Hungary, Poland, Slovakia and Slovenia. Italy and the Netherlands have the Chambers to supervise this process, and so the rest, the majority, of the Member States designate an administrative authority for this task: Bulgaria, Cyprus, Denmark, Estonia, Finland, Greece, Ireland, Lithuania, Latvia, Luxemburg, Malta, UK, Portugal, Spain and Sweden. After all, the guarantees for a court surveillance is granted in all systems, so the

possible slowness of a court system may become the swiftest one if court control becomes a general rule in the other models.

In any event, although the models are challenged from various aspects, there is no need for a change of the models in the Member States from the digitalization point of view. On the other hand, the understanding of the underlying national rules when forming the company may demand a necessary convergence of the business registration models. Because the Court of Justice of the EU (CJEU) does react to the divergence of the company law rules in the Member States. Truly, the CJEU, in its case law, does push the Member States towards a sort of convergency in company law placing its legitimacy on the freedom of establishment requirement set in the TFEU (Articles 49-54 of the Treaty on the Functioning of the European Union). The direction of the movement of the CJEU is however fairly debated (Gerner-Beuerle and Schillig, 2010).

So, within the constraints described above, it is up to the Member States to reply to the basic challenge and to set up a business register model which is best apt to serve a swift, efficient and user-friendly registration procedure and further capable of embracing the digitalized tools necessary to comply with the technicalities required by the EU Commission Regulation of 2015/884.

NEW HARMONIZED TRENDS IN THE INTERCONNECTING OF THE BUSINESS REGISTERS IN THE EU

The proposal for amending the directive 2017/1132 as regards the use of digital tools and processes in company law (2018/0113(COD)) was enacted on the 20th of June 2019 and published in July (Directive 2019/1151). The directive entails further the cross-border conversions, mergers and divisions, as well as the registration of cross-border branches of companies. The target group of the legislative act remains, as it was, the SMEs with few shareholders and employees but with a large share within the entire economy of the EU. According to the impact assessment of the Commission "there are around 24 million companies in the EU, out of which approximately 80% are limited liability companies. Around 98-99% of limited liability companies are SMEs" (Impact Assessment 2018 5.) The legal forms of these companies are, generally, the private companies limited by shares or by guarantees (GmbH, société à responsabilité limitée, entreprise unipersonnelle à responsabilité limitée, société par actions simplifiée, société par actions simplifiée unipersonnelle or *korlátolt felelősségű társaság, kft*).

Notwithstanding the statistical significance of these SMEs, the reason, why these companies should comply with the widest access possible to the business registers at EU level, is precisely this limited liability of these companies. Founders of such companies willingly undertake economic activities thereby plausibly affecting third parties' interests. This market activity should definitely be carried out in a way which could be followed through as easily as possible for the interested stakeholders via business registers. This has always been a firm attitude of the legislators in the EU, or its predecessors in the common market (*Haaga* case of 1974, C-32/74 - Haaga GmbH).

The new directive (Directive 2019/1151) guarantees the possibility that the founders of a company should be able to set it up directly from home into any other Member State. So, it prescribes procedures in the Member States firstly to enable formation and disclosures of companies and registration of branches to be completed fully online. Further, the Member States should be able to provide for templates of company constitutions or patterns of contracts (Article 13h). And the content of the templates shall be governed by national law.

Besides, this directive also relies on the "once-only" principle (Annex IIA, Article 3) of the Single Digital Gateway, and puts the burden of costs and time related to parallel information gatherings about a company onto the authorities managing the business registers. It means that a separate publication in the Official Gazette cannot be mandatorily required neither in the formation nor in the disclosure procedures (Recital 28).

Fairly importantly, "[I]n order to ensure that consistent and up-to-date information is available about companies in the Union and to further increase transparency, it should be possible to use the interconnection of registers to exchange information about any type of company registered in the Member States' registers in accordance with national law. Member States should have the option of making electronic copies of the documents and information of those other types of companies available also through that system of interconnection of registers (Recital 29).

Although clearly, the digitalized procedure is the final aim, the proposal lets the Member States follow their own traditions hitherto in regulating the formation of the companies. Nevertheless, none of the Member States should be allowed to hinder the electronic formation of a company, when the company can do so. Exceptionally, "where obtaining electronic copies of documents satisfying the requirements of Member States is not technically possible, by way of exception, the documents in paper form could be required" (Article 13j). This means that legality check may not hinder on-line formation and disclosure of a company directly by the founders (Recital 20) but these methods may vary. Yet further information may be requested in

order to exclude fraudulent behaviour, but again, this should be also through the electronically interconnected business registers (Recital 22).

Importantly enough, the salient basic information on these procedures should be made by the Member States available online and free of charge (Article 19. p.2.). The directive even put a mandatory minimum list of accessible data which are the most inevitable for the investors in the internal market, such as the name and the registered office of the company, details of the company website, the status of the company (just set up, wound up, dissolved, economically active, etc), the object of the company, the representatives of the company, information on branches of the company, if any. However, the scope of these data remains highly limited because the access to this information varies from Member States to Member States. But in order to build legal certainty and trust in the information in the market, Member States are obligated to maintain the data in the interconnected electronic business register reliable, trustworthy and accessible to all interested parties as much as it is technically possible so far. Hence the requirements under applicable national law concerning the authenticity, accuracy, reliability, trustworthiness and the appropriate legal form of documents or information that are submitted shall remain unaffected by the new Directive, provided that online formation and online registration of a branch, as well as online filing of documents and information, is possible (Article 13c p.3).

MAJOR CHARACTERSITIC ISSUES AND PROBLEMS IN THE REGULATIONS OF THE ELECTRONIC INTERCONNECTED REGISTERS

The electronic interconnection of the registers and the possibility of the on-line cross-border direct formation of a company/branch or any such disclosures in the life-cycle of the companies create fairly new ways in the traditional procedures.

Firstly, the burden of the courts, or the designated authorities, may significantly lessen due to the direct formation of the companies achieved by the founders or by the automation of certain elements of these procedures, like the use of the templates for the formation of a company or a branch in another Member State. Secondly, this may generate a better platform for good will cases, such as the use of others business names. Thirdly, the legal professionals may be replaced by assistants, thereby leaving more time for actual court issues to be decided, like complicated nullity questions. Fourthly, a wider interconnecting of public registers, such as the land registers, the various mortgage or lien registers, the citizens' registers, the criminals' registers, etc, could provide an even faster and cost-efficient process.

In fact this was the real drive of the new directive: "The use of digital tools and processes to more easily, rapidly and time- and cost-effectively initiate economic activity by setting up a company or by opening a branch of that company in another Member State, and to provide comprehensive and accessible information on companies, is one of the prerequisites for the effective functioning, modernisation and administrative streamlining of a competitive internal market and for ensuring the competitiveness and trustworthiness of companies" (Recital 2).

Yet, these easy pathways for the businesses may trigger some serious legal problems of privacy. As the rules against the money laundering or the fraudulent managing of a company or the false disclosures require, there are important information, personal data which are processed and, by interconnection, transferred in these registers. The tension between one's privacy and others right to access to information in the market is certainly evergreen. It may truly be important for the interested parties to find out information about managers or directors who had been found by court liable for fraudulent activities, so that to develop a strategy against such market participants.

RECENT CASES RELATED TO THE RELIABILITY, THE TRUSTWORTHYNESS AND THE ACCURACY OF THE INFORMATION VERSUS THE PROTECTION OF PERSONAL DATA IN THE EU

Although the *Haaga* case of 1974 already pointed out that the disclosure rules of a company, fixed by the then first company directive, is crucial for the trustworthy information in the market, the recent *Google Spain* case of 2014 could cause problems.

Firma Haaga manufactured sterilizing equipments especially for medical or hospital use and was seated in Stuttgart. The founders and owners were the members of the Haaga family, the two brothers were the directors. They could represent the company, each acting alone, according to the basic documents of the company. However, in the event of other directors being appointed, the basic document provided that in any case two directors or a director and a duly authorized person, respectively, could represent the company and sign in its name. Further, the basic document added that the power of directors to represent the company in dealings with third parties was unlimited. The then new EC directive (the disclosure directive of 1968) required that the company registers indicate also who represents and with what capacity the companies. Germany duly implemented the directive, but Firma Haaga did not want to comply with new entries into the register claiming that according to the German (unamended) law if one proceeds in conformity with the law, then no entry needs to be done. This refusal of the Firma Haaga was then challenged at the court and it finally ended up at the Court in

Luxembourg. Based on the opinion of the Advocate General Mayras, the Court of Justice interpreted the directive broadly and confirmed that the common market requires accessible and reliable information and even if the German company register had the entry lawfully, this would not be legible for the market participants form the other Member States, who have no knowledge of the German law.

So, in its decision the Court of Justice construed the directive broadly in order to have a common standard in the (then common) market. It should be noted, that the data provider here is to be the data owner, the company itself and the objective of the directive was to protect third parties – like creditors, employees, local authorities – even at the expense of the members of the company. The market actors need to know who can act with what power in the market so that to hold them liable, if needed.

In a recent case of the *Google Spain* 2014*,* the CJEU allowed a lawyer to claim at Google Inc. to have a piece in a newspaper deleted from the internet. This fairly local small newspaper, which was asked to be taken down from the internet, correctly mentioned the lawyer, Mario González as someone who had had debt towards the tax authorities in Spain. Now, the claim was, that if someone looks for a lawyer in the internet in the region, then Mr. González had not much chance since this negative picture always comes forward. Here the issue was whether one has the right to be forgotten, or the right to have the service provider to retrieve the data, especially, if certain data are posted about someone without his approval. Arguing that the personal data and privacy are protected by the EU Charter, the Court of Justice stated that the right to be forgotten is indeed a right pertaining to it. The Court said that in compliance with the then effective personal data protection directive (95/46/EC) the personal data processed must not be inadequate, irrelevant, and excessive in relation to the purposes for which they are collected (para 92-94).

In fact, this decision raised more questions than answers. When are data inadequate irrelevant, and excessive in relation to the purposes for which they are collected? Is it inadequate or irrelevant or excessive for the client to know if the lawyer defending him had issues with the authorities? No one denied during the litigation that the information had been false or falsified. In this case the interest of the general public to have access to data has failed. As the Court states: "the data subject may, in the light of his fundamental rights under Articles 7 and 8 of the Charter, request that the information in question no longer be made available to the general public on account of its inclusion in such a list of results, those rights override, as a rule, not only the economic interest of the operator of the search engine but also the interest of the general public in having access to that information upon a search relating to the data subject's name (para 99).

This outcome of the *Google Spain* case is hard to be reconciled with the concept of the *Haaga* case. Yet, in a more recent case, the *Manni* case of 2017, the CJEU distinguished the interest of the public from the *Google Spain (*Mantelero, 2016). Accordingly, the public needs to have access to those data in the registers which are indispensable for the market participants. In this case the company of Mr. Manni had been awarded some construction works but if someone searched for his name in the business registers, he could have found a different company lead by Mr. Manni which had gone bankrupt. Mr. Manni claimed at the Chamber processing the registers in Italy, that this "old, irrelevant data" facts(?) damage his chances to make a good sale on his construction works, so it should be retrieved. Interestingly enough, the Chamber insisted upon its right to preserve such information necessary in the market, whereas the courts in all levels were in the opinion that this hurts Mr. Manni's privacy rights protected by the EU laws. The CJEU finally interpreted the EU laws so that it should provide for the conservation of the necessary information in the market as long as reasonable.

One is tempted to reconcile *Haaga* and *Manni* by referring to the fact that both cases interpret the scope of the (state) authorities, Chambers, Registers as opposed to the *Google Spain* case where it was a private market actor who processed the data. From this point of view the decisions may reflect well the good old European distrust in the market and preferable reliance on the authorities.

On the other hand, it is clear too, that the CJEU does play a fairly influencing role in the internal market by promoting a common standard also in the field of freedom of establishment (Krawczyk-Giehsmann, 2019, Ringe, 2017).

CONCLUSION

Obviously, it is not the intent of the EU to harmonise the company laws concerning the business registers in the internal market. The new EU directive (Directive EU 2019/1151) regarding the interconnection of the business registers, which aims to allow electronic formation of a company initiated by the founders in different Member States, would therefore not directly enforce a change in the models of the company registers in the national laws. It is up to the competent legislation to set up the registration requirements and the processes in case of the formation of a company or the communication of/about the company. There is still a broad range of models for registrations in the EU and so it will remain.

Yet, the real challenge in the internal market is how to set up a digitalized network of *trustworthy* registers. Trustworthy, authentic, accurate and reliable in the sense, that it contains true, check-proof data accessible to the widest possible interested parties, such as creditors, shareholders or other stakeholders. And it seems, that this challenge is accepted rather by the Court of Justice, the CJEU.

It seems that the time for the harmonisation of the company law is not yet ripe, not even for the registers, but the case law of the EU provides for a wider spectrum for a level-playing field in the internal market. Surely, this is a slower process.

The various regions within the EU have certainly different attitude towards cross-border activities, thus a possibility for the founders to set up a company directly without a compulsory intermediary even throughout the borders is deeply rooted in the historical and business culture of the region. The attitude towards the role of the state is determining. So, clearly, the drive to implement a better model for a business register is rather triggered by the regional challenges and competition than by the legislative acts of the EU.

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