

CASE STUDY: KEY DRIVERS FOR THE KOŠICE REGION

Authors: Lubomír Bilyý, Viera Holešová & Daniela Olejárová, Centire and Miriam Brašková, Košice IT Valley. The relevant factors were selected on the basis of Wiedenhofer, R. (2012): 'Key drivers of technological innovation: intellectual capital view approach', Int. J. Transitions and Innovation Systems, Vol. 2, Nos. 3/4, pp. 283–301. Tinformation on the Košice region was compiled by Centire & Košice IT Valley. The regional analysis was conducted in parallel with the national analysis of Slovakia which served as a background material. The analysis of the national context was developed in close collaboration with Papula, J. & Volna, J. from the Faculty of Management of the Comenius University in Bratislava.

As learned in the training, the intellectual capital method is used widely by higher education institutions, small and medium-sized enterprises or research institutions internationally. In general, the intellectual capital consists of the identified types of capital (human, structural and relational). Each of them comprises a set of relevant factors that can be considered crucial for innovation growth. The set of the driving factors within a system or a region combines a micro and a macro view. In such a case the innovating organization represents the “micro” world and the environment the “macro” environment. Therefore, our focus will be to present the “macro” perspective on the Košice region and its analysis from a vantage point of the intellectual capital factors.

Since a main training goal aim is to contribute to the increased use of knowledge by SMEs in the Košice region, the main focus was on identifying the adequate resources when developing the analysis. It provides an up-to-date and comprehensive overview of data regarding the innovation status of the Košice region and its development potential. The regional analysis of the Košice region comprises the following factors within the three main types of IC capital:

Human capital

- Qualified staff on the regional labour market
- Professional expertise (of potential employees) / educational standards
- Leading figures and stakeholders

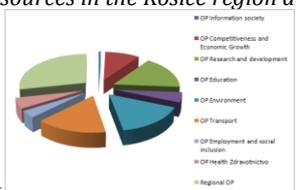
Structural capital

- Technical framework
- Scientific facilities
- New technologies
- IP Rights
- Innovation and R&D budget within the company
- Geographic proximity of organisations
- Internationalisation
- Trust, conventions and cultural aspects
- R&D funding (programmes)
- Institutions for knowledge transfer and support
- Traffic facilities and local public infrastructure
- Organisational structures for R&D and innovation

Relational capital

- Cooperation with economic partners
- Cooperation with university partners
- Cooperation with funding institutions from the private as well as public sector
- „Weak ties“ (suggested focus on the cooperation of the region with others)
- Relations to national governmental institutions and policy makers

	FACTOR	DEFINITION	DATA
HUMAN CAPITAL	1. Qualified staff on the regional labour market	This factor describes the available number and the relevant qualification of specialised staff available on the regional labour market. To achieve this, a sufficient number of educational institutions in the region, which offer a corresponding study programme, are necessary.	Except primary and secondary schools in the Košice region, there is a cluster of strong universities located in the city of Košice – Pavel Jozef Safarik University, Košice University of Technology, Theological Faculty of Catholic University in Ruzomberok, University of Veterinary Medicine, Faculty of Business Economy of the University of Economics in Bratislava and the private university – Vysoka skola of Security Management. Students have opportunity to choose from more than 300 different study programs.
	2. Professional expertise (of potential employees) / educational standards	For planning and implementation of innovation and R&D projects, a sufficient number of specialized employees are necessary in the companies. For a long-term commitment of employees and the development of a pool of skilled personnel, career opportunities and incentive systems should be implemented.	Expenditures on research and development are still low. There is a lag compared to average expenditures of Western European countries and likewise the given proportion on 3% of GDP, given by the EU is not met. But referring to the last years, a positive trend, where expenditures on national and regional level (Košice region) have been increasing, can be seen. The main sources of finance include public funds; the proportion of private sector expenditures on research and development in the Košice region is lower.
	3. Leading figures and stakeholders	This factor describes the role of leading figures (entrepreneurs, Politicians and scientists) with regard to their influence on the shape of a RIS (Regional innovation system).	A regional innovation system encourages the rapid diffusion of knowledge, skills and best practice within a geographic area larger than a city, but smaller than a nation. The Košice Self-governing Region is in the process of preparing the Regional Innovation Strategy of Smart Specialisation by 2020.

STRUCTURAL CAPITAL	1. Technical infrastructure	For diverse R&D and innovation activities technological infrastructure (measuring and testing equipment, labs, IT...) must be disposable within reach.	TECHNICOM – In the future University Science Park will stimulate, develop and provide support mainly for applied research. It will implement effective knowledge transfers, products and technology transfers between universities, research institutions and companies in the marketplace based on mutually beneficial cooperation. It will also contribute to the development of innovation-based companies in the form of "spin-offs" or "start-ups". (2014)
	2. Scientific infrastructure	For diverse R&D and innovation activities scientific infrastructure (measuring and testing equipment, labs, IT...) must be disposable within reach.	MEDIPARK – Biomedical university science park as a high-quality centre for applied research and a centre for the implementation of results into practice in the field of biomedicine at both the national and international levels (realization in June 2015). There are also special laboratories available within university premises and departments of the Slovak Academy of Science located in Košice, but there's not general information on available HW. The most important lab is Promatech – the research centre aimed at the new progressive materials.
	3. New technologies	This factor stands for the implementation of new Technologies and technology transfer in companies. The acquisition of technologies can be done by own developments, purchasing technologies or patents, mergers and acquisitions or in course of cooperation.	The aim of former Regional Innovation Centre : creation and diffusion of innovations, regional management of innovation. The special offices were established (at the UNIs – TUKE, UPJŠ); both offices are in the process of carrying out an internal audit, mapping of R&D and technology transfer possibilities with UNIs. The Technology transfer is basically realized via the Competitiveness and Economic Growth OP and Research and Development OP. The Košice Self-governing Region is a successful recipient of financial aid from the EU structural funds. During the 2007–2013 programming period, there have been 977 projects implemented, with a value of 968 million EUR in different fields within the region.
	<p>Figure 2: Usage of financial resources in the Košice region according to the operational programmes in 2007 – 2013. ¹</p> 		

¹ Source: www.nsr.sk

<p>4. IP Rights</p>	<p>The availability and protection of intellectual property rights is important in this context. This should be a factor under RC – Protection of IP rights.</p>	<p><i>Figure 3: Evolution of a number of registered patent registrations in Košice between 2005 and 2009</i></p> <table border="1" data-bbox="772 253 1257 376"> <thead> <tr> <th>2005</th> <th>2006</th> <th>2007</th> <th>2008</th> <th>2009</th> </tr> </thead> <tbody> <tr> <td>3,42</td> <td>2,33</td> <td>5,00</td> <td>3,00</td> <td>2,00</td> </tr> </tbody> </table> <p>TUKE: TT Office is also focused on protection of intellectual property (UCITT)</p>	2005	2006	2007	2008	2009	3,42	2,33	5,00	3,00	2,00								
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<p>5. Innovation and R&D Budget within the company</p>	<p>For implementation of the innovation and R&D projects a corresponding budget must be provided. The necessary amount should correspond to the corporate strategic positioning (e.g., technology leader) and can be part of an innovation strategy.</p>	<p>Such a budget is allocated mainly by medium-sized and big industrial companies in the region.</p>																		
<p>6. Geographic proximity of organisations</p>	<p>The geographic proximity of organisations and local to regional factors are of high importance in many industrial site models and are partly seen as key factors for the success of companies within these regions. (Clusters and centres of excellence are potential examples which could be mentioned within this context).</p>	<p>The Košice IT Valley cluster cooperates with SMEs, other clusters, international and foreign partners, public sector. Besides the KEITV cluster whose aim is to create suitable conditions for the creation and development of ICT centre, two other technological clusters operate in the Košice region. AT+R cluster focuses on the automotive technology and BITERAP aims at offering the ICT support for the processes in the public sector and control processes demanding higher level of security. In the neighbouring Prešov region the Energetický klaster (Energy cluster) promotes the use of the renewable sources of energy. The tourism clusters are represented by the city cluster of tourism – Košice Turizmus (Košice Tourism) and cluster Turizmus tatranského regiónu (Turism of the Tatra region) localized in the Prešov region.</p>																		
<p>7. Internationalisation</p>	<p>Internationalisation leads to global competition, enhanced competitive pressure and at the same time to a decrease of the development time of new technologies through increased interdisciplinary cooperation.</p>	<p>There is international cooperation on the level of universities (TUKE, UPJŠ), region, city and the Košice IT Valley cluster. TUKE internationally cooperates with the countries of EU (mainly Czech Republic, Germany, France, Italy, Poland and Spain); it collaborates also with non-EU countries (e.g., USA, China, Russia). Within the LLP – Erasmus, the university has cooperated with 124 partner universities from 21 different countries. UPJŠ has a contract with universities in Europe, America (USA, Mexico) and Australia. The region works closely with the V4 countries. Moreover, there is cross-border cooperation with Hungary (and Ukraine). Businesses in the field of ICT produce mainly for export. Local customers are not so common.</p>																		
<p><i>Figure 4: The biggest and the most important foreign companies and employers in the Košice region</i></p>																				
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<p>8. Trust, conventions and cultural aspects</p>	<p>This factor stands for non-formalised norms, rules, conventions, habits, traditions as well as trust, which arise from social interactions in the long run. These values are bilaterally accepted and reproduced by all actors.</p>	<p>In contrast to other OECD countries, cooperation between the business sector and research at the universities or Slovak Academy of Sciences is insufficient.</p> <p>Before 1918, only 20% of people living in Košice on average declared Slovak language to be their mother tongue. There was a mix of nations during the history of Košice – Hungarians, Slovaks, Polish, Jews, Germans and Romanies. On account of these various nations living in one place, Košice is today well-known as a city of tolerance.</p>																		

		<p>The significant impact on the mentality of Slovaks, their habits and culture, has a strong catholic religion and post-communist history. Slovakia had been for a long time confined from the surrounding world; the situation started to change after 1989. Anyhow, “the old generation” is still conservative and afraid of new things.</p> <p>There is still a silent tension between east and west Slovakia, especially between Košice and the capital Bratislava, due to a different atmosphere, salaries, employment opportunities etc.</p>
<p>9. R&D Funding (programmes) – which are regionally available (could also be national ones, from which the region takes benefits) and fiscal incentives for R&D</p>	<p>This factor encompasses all kinds of direct R&D funding, such as diverse structural and thematic programmes on a regional, national and international (EU) level.</p>	<p>It is possible to obtain:</p> <ul style="list-style-type: none"> • Funding on the national level (VEGA, KEGA, APVV schemes) • EU Structural funds • EU / other international funds – ERDF, cross-border cooperation, Visegrad fund • EU community funds – FP7, H2020, LLP, Erasmus+ <p>Funds to support R&D on a regional level (Košice region) do not exist. There is also indirect support in the form of policies, strategies, and planned premises for the regional innovation centre, but not direct funding of R&D.</p> <p>There are examples of cooperation between university and business with even significant results (products to market), but no mapping or systematic approach has been implemented so far.</p>
<p>10. Institutions for knowledge transfer and support</p>	<p>Knowledge transfer institutions offer and coordinate supporting measures, consult and organise dissemination, networking and matchmaking, etc. Beyond this regional or national state organisations also support export (e.g. from the Košice region).</p>	<p>Chambers of commerce – Slovak chamber of commerce and industry, other chambers of commerce (American Chamber of Commerce) SARIO – has a regional office in Košice Clusters – IT Valley, Cluster AT+R Regional innovative centres – in Košice, Prešov – private activities Regional development agencies – Košice, Prešov (Košice and Prešov self-government regions)</p>
<p>11. Traffic facilities and local public infrastructure</p>	<p>This factor characterises the traffic and public infrastructure, especially public transport networks and super-regional transport connections.</p>	<p>Road transport: The region has roads of class I, II and III in the total length of 2379.3 km. In November 2013, the section of expressway R4 on the route Košice – Milhost was opened. The only highway section is motorway to Prešov.</p> <p>Air transport: The Košice international airport provides regular airline flights to Bratislava, Prague, Vienna and most recently London.</p> <p>Rail transport: Košice has a strategic position in relation to rail transport. Košice is located in the intersection of East West Corridor (Prague-Košice-Cierna nad Tisou) and north-south transit corridor (Košice-Poland-Hungary). Cierna na Tisou is a major railway hub for international transshipments.²</p>
<p>12. Organisational structures for R&D and innovation (included as example in point 4)</p>	<p>For the generation of ideas and innovative products permanent organisational structures for innovation projects are of importance. These structures can be formed by temporary innovation management groups, teams for the creation and assessment of ideas to the point of permanent R&D departments.</p>	<p>UCITT (value chain): Promoting cooperation with practice (research, innovation, transfer of technologies) → Support for scientific, research and innovative projects → Support of intellectual property right protection → Support of human resources development and methodologies in the field of innovation and TT → Marketing support services UCITT</p>

² http://www.sario.sk/userfiles/file/sario/pzi/regiony/Košice/kosicky_kraj.pdf

R E L A T I O N A L C A P I T A L	<p>1. Cooperation with economic partners</p>	<p>This factor stands for cooperation between economic partners, which typically exists along the value chain (suppliers, customers).</p>	<p>UCITT (value chain):Promoting cooperation with practice (research, innovation, transfer of technologies) → Support for scientific, research and innovative projects → Support of intellectual property right protection → Support of human resources development and methodologies in the field of innovation and transfer of technologies → Marketing support services UCITT</p> <p>Example: IT Valley partners: ASIT, Centire, SARIO, ISA, BIC Bratislava, EEN, Bez&Dis, WUG Košice, ZMPS, Košice – Staré mesto, Košice regional chamber, Dunajský vedomostný klaster (Dunaj knowledge cluster), Dunajský vedomostný klaster, ITAS</p>
	<p>2. Cooperation with university partners (e.g. bigger projects, platforms, strategic alliances, competence centres.....)</p>	<p>This factor describes different forms of cooperation with universities and other R&D institutions. It includes different forms of contracts, common projects and institutionalised forms of Cooperation.</p>	<p>Example: UCITT – VUKONZE, TECHNICOM (in process), INFRA PROJECTS (purchase of equipment for R&D)</p> <p>TUKE – possibilities of cooperation: European Technological Platform ARTEMIS, CERN, industrial cooperation (contract based)</p>
	<p>3. Cooperation with funding institutions from the private as well as public sector</p>	<p>This factor describes the financial support from different institutions, such as EIB and EIF or private VCs.</p>	<p>With the hype of innovations, ideas of start-ups, spin-offs and spin-offs become more common in the region.</p> <p>Nowadays, many different activities are present:</p> <ul style="list-style-type: none"> • Independent – Start-ups Camp, Start-up weekend • University-based – TECHNICOM and MEDICAPARK project • Region-based – project of regional innovation park <p>Cooperation is still not highly present in the region. The above-mentioned activities are more focused on networking, promoting the topic, starting discussions and motivating.. There is no data available on VC.</p>
	<p>4. “Weak ties” – (suggested focus on the cooperation of the region with others)</p>	<p>This factor describes so called ‘weak tie’-relationships with others and also stands for an openness of the system to external actors.</p>	<p>n/a</p>
	<p>5. Relations to national governmental institutions and policy makers</p>	<p>This factor describes the relation to several national policy makers and institutions, which govern the development of the regional entities.</p>	<p>The City of Košice is the seat of the Constitutional Court of the Slovak Republic. (The Constitutional Court decides on the compliance of the norms of the lower legal force with superior rule of law and the competence conflicts between central bodies of public administration).</p> <p>From the other state institutions, the President of the Slovak Republic runs a regional office in Košice, as well as the Government Plenipotentiary for the Roma communities. Other state institutions in the Košice region include subordinate offices of the ministries situated in Bratislava.</p>