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Are the tasks of innovation intermediaries changing? Findings of an empirical study from Dunaújváros / Hungary

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Are the tasks of innovation intermediaries changing?

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Abstract: *This paper focuses on the efficiency of innovation intermediary organizations and also reviews the connections of intermediaries with regional and local actors emphasizing the human side of innovation. In the beginning I define the organizations and the innovation process as a special market, specify their tasks and then analyze their regional and local impact through a specific example of the current situation and innovation potential of a Hungarian middle sized industrial city, the city of Dunaújváros.*

New definition of innovation intermediary organizations

Definition of innovation intermediary organization can be based on national and sub national innovation systems and on technology transfer of institutions constituting the spreading of innovation. On the other hand, marketing behaviour and innovation strategy of companies also can be connected with this definition¹.

In my point of view, innovation intermediaries need to be defined through the “human side” of innovation – by the knowledge, motivation and actions of the participants in the innovation process. Definition of innovation intermediaries thus need to be based not on a superior system or organization but on the people participating in this process.

Innovation intermediary organizations are funded because of a special market and communication niche, or because of a knowledge gap or information shortage. These organizations and their employees complement the activity of participants in the innovation process with their knowledge and skills.

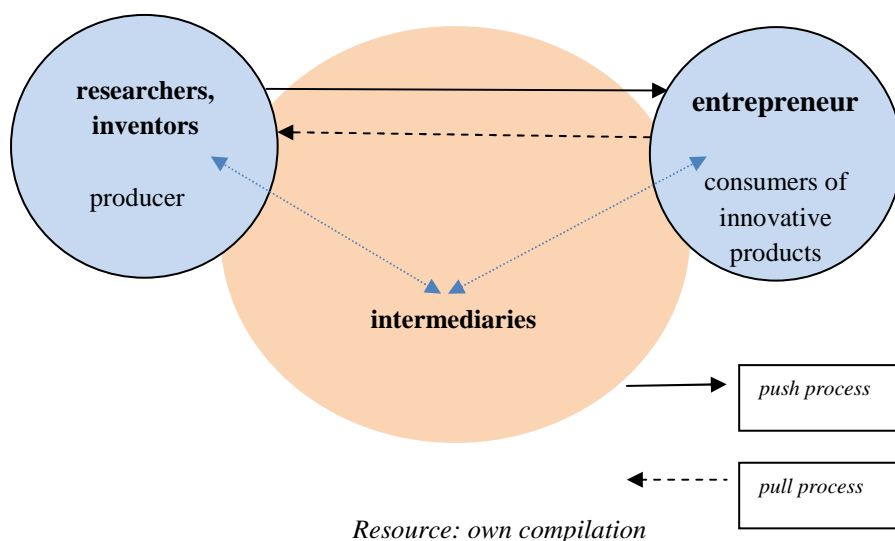
Innovation is closely connected with the inventor or researcher and marketing the invention also needs experts who have knowledge and information about the market. Intermediary

¹ Buzás N., 2007

organizations employ people with specific skills and attributes and with these they can influence the effectiveness of the innovation process.²

The innovation process can be illustrated as a special market in which researchers stand on one side – as producers of inventions – and companies on the other side – as consumers of innovation. Between them intermediaries are seated with task like vendors on a fair or like marriage brokers. They try to put the two participants in touch with each other but as they speak different languages the job is really difficult. This market is special because of this “language barrier” and that two parties have variant motivations and interests. Therefore intermediaries need to know them – like marriage broker knows the man and woman –, have to speak their languages and discover and understand their motivations. So intermediaries have to work on the field of human relations and human resources.

1. figure: simple model of innovation process



The above figure shows a simple model. The model is simple because it does not contain all component of the process - laboratories, high educational institutes, marketing companies e.g. are missing. Besides I wish to emphasize the human side of innovation mentioning researchers and entrepreneurs in spite of indicating high educational institutes and companies. As the knowledge and relationship is very important in the process and it is bound closely to persons and skills, I keep to use the above designations.

² Nagaoka, Kondo, Flamm, Wessner, 2009

I use this simple model to elaborate a new definition to innovation intermediary organizations. Unlike previously mentioned definitions I start off from the human side of innovation and the distinctive knowledge of people in the innovation process. Therefore I define innovation intermediary organizations as *organized groups of people which are connected or impregnated into the innovation process and supplement the missing knowledge, information, skills, attributes or relations of researchers and entrepreneurs with their specific knowledge, information, skills, attributes or relations to help in the market based production and the marketing of the innovative product.*

According to this new definition, we also need to reconsider the basic principles and the tasks of intermediaries.

Nagaoka et al.³ describes some principles which are essential for an intermediary to establish connections with the consumers of the innovative product. The principles are the following:

- The relations of intermediaries need to be built on cooperation which is not a zero sum game. The interests of both parties need to be satisfied and every project that violates this principle will be unsuccessful.
- Cooperation has to be fulfilled in a long term and every methods and resources need to be adjusted to this aim.
- Both researchers and entrepreneurs have to make allowance for their mutual benefits.
- Higher educational institutes – therefore intermediaries – have social responsibilities. Hence, education and knowledge have to be elemental in their work and their independence has to be assured.

Tasks and working methods of intermediaries also have to be reconsidered. Nagaoka et al.⁴ mentions principles of processes in the intermediary organizations which increase the effectiveness:

- small, flexible and flat organization structure
- autonomy and independence, breaking down bureaucratic gaps
- employing well-trained and qualified experts
- forming groups to implement tasks and sharing the knowledge between groups
- balance in fluctuation of human resources to assure the share of knowledge and skills
- working in projects, using feedbacks

³ Nagaoka, Kondo, Flamm, Wessner, 2009

⁴ Nagaoka, Kondo, Flamm, Wessner, 2009

- employing well-trained project management
- accepting failures
- concentrating to revolutionary inventions
- promoting relationships and cooperation

We can also complete this list with one more factor – according to Deem et al.⁵ – that is to concentrate to the value of inventions and to the value production. The definition of value contains many risks as the value in an innovation process can be subjective. Participant can have different definition of this value; the invention can be precious for one participant and worthless for an other. Despite value always exists. Therefore intermediaries have to reveal and understand this value to make the innovation process more effective.

Considering the above mentioned principles I elaborated a new working method for intermediary organizations. The method was also based on the Project Cycle Management (PCM) Model of the European Commission. Combining the process of PCM with innovation management methods, I developed the model of Innovation Cycle Management (ICM).

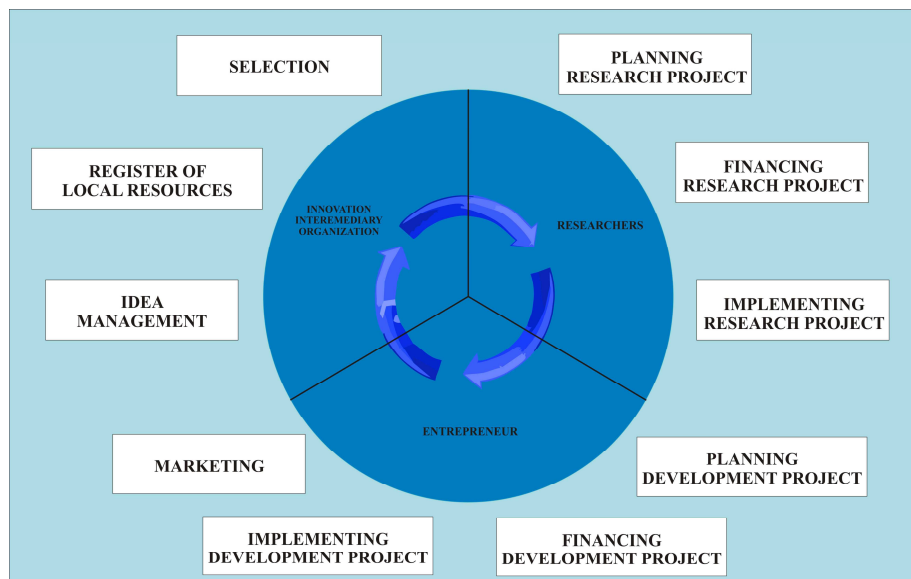
ICM have to be based on the following tasks:

- collecting and managing ideas and inventions
- collecting and managing information about resources – human resources, technology, financing possibilities, etc.
- establishing relations with researchers and research institutes
- establishing relations with entrepreneurs and marketing organizations
- fulfilling horizontal tasks like cooperation, amplifying trust, communication and knowledge transfer

Working process of innovation intermediaries can be illustrated as a cycle, a concentric process. Knowledge transfer and learning process are the main elements of this model as cycle means to learn from the experiences of a finished project and build it into the next process.

⁵ Deem – Hillyard – Reed, 2007

2. figure: Innovation Cycle Management Model



Resource: own compilation

ICM contains three main sections:

- tasks of the innovation intermediary organizations
- tasks of researchers
- tasks of entrepreneurs

The last two parts contains two projects; the research projects and the marketing project. Research projects concentrate to the production of invention and innovative product, and marketing aims to transfer this product to the consumers.

To describe the tasks of intermediaries we need to focus on the first part of the model, however intermediary organizations have to participate in all the three sections. The above mentioned figure cannot clearly demonstrate the functions and role of intermediaries – e.g. they have an important role in cooperation and communication with the other two parties in all parts of the model so they cannot fulfil their tasks independently. (The dark blue cycle on the figure tries to show this role.) The above model also represents that innovation process is not linear and continual feedback is a main task in the process.

The first section – intermediary section – contains tasks like collecting and managing information and data, managing resources or identifying and selecting prosperous ideas and launching the innovation process. The section of researchers contains a special research or R&D project which can be implemented by the method of project cycle management (PCM). The last section – but not the least due to the cycle – is the part of entrepreneurs who

implement product development than introduce the new product into the market. Both part can follow the phases of PCM and marketing can be fulfilled using special marketing methods and assets – like positioning, PR, marketing communication, etc.

Regional and local impact of innovation intermediary organizations through a specific example – innovation in Dunaújváros

Dunaújváros, a town of County Rank, is located in the middle of Hungary, near river Danube, 60 km south from Budapest. The 50 years old (young), medium (population less than 50,000) town was built in the industrialization period of the 1950's together with an enormous city sized steel company called Dunai Vasmű (Dunaferr).

3. figure: Location of Dunaújváros



Resource: Rohonczi, Gajzago, 2005.

The steel company has influenced and ruled the economy of the city till 2002. Curiously the local monocultural economy survived the changes after 1989 and the privatization of Dunaferr only happened in 2002 after the company nearly bankrupted. The privatization of the local ruling company changed the situation of the city too. As Dunaferr had participated in the finance of many local social and cultural services, and this resource decreased after 2002, the city had to focus on resolving several problems. To make the local society prepared for the changing environment, a regional development association – BRIDGE Dunaújváros and its Region Association – was founded in 1995. This organization successfully collected local actors who wanted and was able to do something for subregional development.

In the last decade the city had to face other challenges and had many other possibilities for development like

- enormous infrastructural investment in the subregion (Danube-bridge on Danube near Dunaújváros and M6 highway from Budapest to Dunaújváros)
- Hungary joining the EU
- subregional institutional changes (change of subregional borders and transformation of subregional institutions)
- development of the local higher educational institute
- settling of two international (global) companies – Hankook Tire Ltd., Hamburger Hungária Ltd.

According to the above mentioned facts, Dunaújváros has special possibilities to develop its innovation potential like the followings:

- dominant and international steel company existing since the 1960's – developed industrial culture, creative class
- extent and modern infrastructure
- developing and successful local middle-sized companies in the sector of heavy, building and electronic industries
- existence of innovation intermediary organizations
- well trained and experienced human resources in the field of innovation and innovation management
- developing higher educational institute

Unfortunately the city can hardly capitalize its outbreak points and has a chance to lose the above mentioned possibilities. Innovation intermediary organizations may help to resolve this problem.

The market of innovation services is shared by six organizations in the subregion that are the following:

- The subcentre of Central-Transdanubian Regional Innovation Agency: M8-Danubebridge Public Company
- Innovation Council of Dunaújváros Sub region
- Organizations of the College of Dunaújváros:
 - Innovation Management Centre

- Ecotech Incorporated Company
- Innopark Public Company
- Local Chamber of Commerce and Industry of Dunaújváros

Besides of the above mentioned organizations, the Innovation Council launched the Local Innovation Award in 2009, which can be gained annually by local innovative companies. Intermediary organizations and their experts usually organize innovation conferences and participate in the elaboration of local innovation strategy.

Among the above listed organizations Innopark and the Chamber do not directly connects the innovation process. Innopark Public Company is only responsible for the local industrial park and handles rental issues. However it would be more successful to offer special innovation services to its lessees. The Chamber allies local entrepreneurs and offers them several services but only a small percent of these are connected – indirectly - with innovation.

Due to the globalization regions and cities need to face with several challenges. The new economic structure results different factors of success. Only those regions and cities can gain which can possess or maintain competitive entrepreneurial factors. On the other hand, the field of competition was relocated from nations to regions and cities and the aim has changed from national growth to the wellbeing of people living in a specific region or a city. Thus success depends on the methods and assets of regional or city governance. In Dunaújváros, most of the resources for successful innovation are available. Innovation organizations were founded – as mentioned above –, skilled and experienced researchers and managers can participate in the innovation process and there is a modern infrastructure for innovation (laboratories in the College of Dunaújváros) too. Besides intermediaries are committed to discover the motivations and interest of the local actors and cooperate them to positively influence the competitive factors and innovation potential of the city.

One of the main regional or local factors in global competition is creativity. Cities or regions can be defined as a cradle of creativity which is elemental for innovation and for establishing an innovative milieu⁶. Intermediaries can have a strong impact on creativity through knowledge and information transfer and with their marketing and promotion activity aiming to increase the reputation if innovation. Unfortunately intermediaries in Dunaújváros are not

⁶ Johnson-Lehmann, DRUID WorkingPaperNo. 06-17., 1. p.

really successful in knowledge transfer and communication especially with SMEs as it is demonstrated by the research result in the following chapter.

Together with globalization localization also became important and the local base and headquarter of global companies usually plays an important role in the effectiveness. Therefore local cooperation and local special factors gained more significance too. Local networks or clusters e.g. are one of these factors, in which local municipalities or public and financial institutes can participate together with prominent companies or universities. Innovation intermediaries need to focus on the establishment of these networks or clusters and strengthen cooperation between the participants of the innovation process. However this cannot be fulfilled without building a strong and trust-based relationship with them.

Specific regional or local factors can also strengthen the innovation milieu. Enyedi⁷ identifies several of these factors, like geographical location, infrastructure, knowledge based innovative industrial environment, successful decision making process and conflict management, extensive external relations and the knowledge capital of inhabitants. Innovation intermediary organization can have several impacts on the listed factors, especially on human and social capitals through knowledge transfer, introducing new technologies and methods or establishing and participating new innovation networks. In Dunaújváros intermediaries established and joined several networks and clusters – like the „Regional Program of National Cooperation – Dunaújváros” or the Central-Danube Regional Economic Development Platform – but as it is difficult to build a trust-based partnership between companies, these organizations do not work well. Besides, the rivalry of intermediaries also impedes successful cooperation. Recently, leaders of the city and the two intermediaries decided to legally strengthen cooperation between intermediary organizations and sign a partnership treaty with the main participants of innovation process. This partnership can result the growth of effectiveness and innovation potential of the subregion as the innovation actors can use factors and resources more effectively.

Strategic decision making process of a region or a city is essential to increase innovation potential. Intermediaries possess useful information and data about innovation and local resources therefore they can participate in the elaboration and implementation of these strategies. Successful innovation strategies improve the ability to gain the trust of foreign investors too. With their extended relations and cooperation skills, intermediaries can

7 Enyedi, 1997

positively influence investment decisions. On the other hand, the settlement and economic weight of global companies need to be compensated with the development of local SMEs. Innovation intermediaries can have an impact on the promotion and subsidies offered to local SMEs and on the establishment of a local innovative supporting environment with the knowledge transfer reaching small and medium companies or with the involvement of SMEs to local networks. As the research results show in the next chapter, innovation intermediaries of Dunaújváros are not really effective in knowledge transfer or transferring information therefore they need to improve these type of services offered to SMEs. On the other hand, cooperation with local governance is more effective hence most of the intermediaries are mainly or partly owned by a public institute or the city. For example, Innopark Public Company is owned by the city, the College and the large steel company together.

Innovative potential of a city and the gained trust of foreign investors can be influenced by local services offered to companies or inhabitants. Especially services to the creative class or intellectuals can influence innovativity. Intermediaries have to identify the service needs of creative class and support their elaboration and improvement in cooperation with the local government. Dunaújváros, as a special modern city, can offer several services for the creative class. There are many cultural institutions and entertainment facilities like museum, theatre or movies and the city is famous for its modern and contemporary art too. Besides these services are not directly targeting the creative class or foreign investors employees. One of the tasks of intermediaries is to survey the needs of these target groups and establish cooperation with local suppliers to fulfil them.

Furthermore foreign investments cannot be implemented without a special industrial area and offering free landscapes for new company buildings. Municipalities need to elaborate their local development plans together with main service suppliers and intermediary organizations because they possess adequate information about innovation and service capacities. In Dunaújváros, there is a lack of free industrial areas due to the special geographical landscape and vicinity of subregional settlements. In the last few years the investment of Hankook caused debates and several governmental problems as the city could not offer enough space for the company. Therefore Hankook settled to the neighbour village – which became a small town then – called Rácalmás.

As the above mentioned examples show, the innovation potential of Dunaújváros and the effectiveness of intermediaries can be and need to be increased. The main problem of innovation intermediaries is the lack of cooperation and the rivalry of these organizations. Although it is really difficult to establish a trust-based partnership in Hungary it would be essential for further results. The base of the cooperation of Dunaújváros intermediaries can be the positioning and market share of their services. Most of them have different target groups; the College contacts researchers and large companies, or the Chamber targets SMEs. Besides of segmentation of the market or the competency based distribution of tasks also would increase effectiveness and strengthen the trust of target groups in the subregion.

Introduction and conclusions of a local innovation research

In cooperation of two local innovation intermediary organizations, in 2011, a local innovation research was implemented in Dunaújváros, including three target groups – local companies, researchers and financial organizations. (In this paper I only introduce the results of two target groups, the results of researchers and companies.) The goal of the research was to explore the knowledge and motivations about innovation of local actors and therefore identify the image factors and further tasks of innovation intermediaries.

As the number of received questionnaires had not exceeded 150, the research is not representative. However 53 researcher filled questionnaires and the expected number of researchers employed in the College of Dunaújváros is 60. Thus 88% of the target group of researchers was involved. The number of involved companies – mainly (82.1%) SMEs – was 78. We can summarize the data of the respondents as following:

- Most of the responding companies were founded after 2000.
- The rate of responding companies represents the rate of local industrial sectors – mainly works in the field of industry or building trade.
- Most of the respondent persons – in the company target group – work as a top executive so they can influence the decisions about innovation of the companies.
- Most of the respondent researchers was a woman and in the average age of 31-40.
- Most of respondent researchers work in the field of technology and engineering.

Respondents have extended information and knowledge about innovation, which also shows that they are interested in innovation. For example only the 3.8% of responding companies did not know what innovation exactly means and most of the companies used the extended definition of innovation.

Besides, 60.3% answered that they do not know any of the innovation intermediaries in the city. However, after we listed these organizations, only 22.8% could not recognize any of them and more than 30% answered that they are in relation with some of these intermediaries. Most of the respondents have already established relation with the local Chamber of Commerce and Industry as the registration in this organization used to be obligatory (and from 2012 it is obligatory again). So the Chamber has the strength to easily reach local entrepreneurs and its image is strong. Besides, the Chamber cannot offer as much innovation services as other intermediaries. As other intermediaries have difficulties to reach local companies, it is essential for all organizations to cooperate.

According to the importance of innovation intermediaries we found the following:

- Companies mainly are interested in financial possibilities and only a few (9) percents needs information about local innovation opportunities. This shows that local companies are bound to foreign and larger companies and their innovation decisions are not made in the region. Intermediaries need to focus on identifying innovation needs of SMEs which are not influenced by the large companies.
- Most of the companies are not aware of subregional research projects and innovation possibilities however they wish to get more information regarding to innovation. Intermediaries need to call their attention to the importance of subregional projects and involve them in subregional development too.
- Many of the responding companies stated that they do not innovate. This was disproved by several personal interviews where respondent leaders of SMEs realized that the development they preceded was actually an innovation. Do they really know the definition of innovation then? Intermediaries have to focus on communicating and transferring knowledge about innovation.
- Examining the lack of innovations we could indentify two main reasons; financial problems and the lack of ideas. Fortunately only the 5.1% of companies answered that they “do not need” innovation which shows they are aware of its importance. Both financial and idea problems can be handled by intermediaries as they can connect

entrepreneurs with financial organizations and researchers too. The importance of intermediaries also can be proved by the answers like “we do not have anybody to handle innovation” or “we do not have enough information about possibilities”.

We also examined the image of innovation intermediaries and their involvement into innovation process. Unfortunately most of the local companies stated that they do not have connection with the local researchers. (Only 6.4% of the respondents are in a partnership with the College.) It seems that the local intermediaries could not connect successfully the two main participant of innovation process. Examining the reasons of this sad fact, we noticed that the high price of research services was not mentioned by the respondents. Therefore the service prices of the local College and laboratories are acceptable for the consumers.

Through an other question of the questionnaire, we could indirectly analyze the reputation of intermediaries among companies. Asking them about their source of information according to innovation, only a few company mentioned innovation intermediaries. This shows that intermediaries have to change their marketing activity or strengthen their communication to reach more entrepreneurs. As personal information sources are important in a medium sized city like Dunaújváros, it would be effective to use direct marketing or public relations methods. Examining the reputation of intermediaries among researchers, a contradiction was found. Only the 22.6% of researchers stated that he or she knows the local intermediaries while 62.3% of researchers know the local organization from which they can receive information about innovation. After all researchers know the innovation intermediaries of the College and intermediaries need to capitalize this to establish closer and trust based connection with them.

One of the main aims of the research was to identify the motivation and interests of local actors in innovation. Examining the interest of researchers we found the following:

- The priority ranks of motivations of researchers usually participating in innovation projects are different from other researchers who are not involved in projects. Publication possibilities for example are in the beginning of the list of the first group but at the end of the second. Besides, establishing connections is more important to the researchers involved in projects than other researchers. Despite of this, professional career motivates the “non-participating” researchers more.

- Publication facilities as motivation can differ because of the fact that only results of projects can be communicated or that in joint research projects not every researcher want or can publish (e.g. an other researcher of the team publishes).
- Researchers are not really motivated to join a research team. ‘Scientists may understand the rationale for collaboration but in their hearts would not buy into it. To scientists collaboration is a sign of weakness. For global innovation, for which collaboration is paramount, such an attitude can provide a significant obstacle.’⁸ Despite, innovative companies usually require joint teams – with university and company researchers – to work together therefore team-worker skills for researchers are essential. Intermediaries have to offer educational services to researchers to develop this skill.

The identification of companies’ interests and motivations for innovation resulted the following:

- The most important motivation factor of innovation – as in management – is the profit and effectiveness of the company. The respondent companies however are not really motivated by the technological necessity or by the changeover of the profit. The irrelevance of these two categories can be explained by the high number of supplier or micro companies which do not need or do not have the possibility to follow modern technology. Innovation intermediaries have to call their attention to the importance of innovation factors and offer them possibilities to innovate.
- SMEs mainly are not motivated by the success of employees in a project or their personal development. It seems that companies do not realize the importance of internal knowledge and their human resources. Human side of innovation therefore has to be emphasized by the intermediaries.
- The main part – 72% – of the respondent large companies is not motivated to strengthen or establish partnership through participating in an innovation project. In a global foreign company innovation decisions are made in the home base of the company so Hungarian headquarters are not really concerned cooperating local researchers. Innovation intermediaries need to find special local factors – e.g. special and unique knowledge of local researchers - or market niche which they can offer for the global company as a base of cooperation.

⁸ Stamm B., 2003, 201. p.

The above demonstrated research revealed several local and organizational problems that intermediaries and local decision makers need to resolve to make the innovation potential of Dunaújváros more effective.

Conclusions

The importance of innovation and therefore innovation intermediary organization is increasing in supranational, national and regional level. Europe 2020 and Horizon 2020 programmes for example focus on the development of innovation capacities and the effects of innovation process. The importance of innovation and R&D is also noted by Jain, Triandis, Weick too, as the following: „research is going to be one of the most important jobs in the society of the future⁹”. Human side of innovation and knowledge transfer has also become significant in the last decade.

In a medium city like Dunaújváros, innovation and human capital is one of the main competitive factors which can increase the innovation potential. Local actors of innovation and intermediaries need to establish trust-based and prosperous connections and satisfy the needs of the creative class and the consumers of innovation products. As innovation process can be defined as a special market, and in a medium sized city partnership can be different than larger areas, human side of innovation became more and more significant. Innovation intermediary organizations have to adjust their services and tasks to emphasize these trends and cooperate to cope with global competitiveness.

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⁹ Jain R.K., Triandis H. C., Weick C. W., 2010, 13. p.

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