Process Innovation within East European SMEs – The PIM project and the role of the Innovation Management Cooperation Research Center

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Abstract: Four types of innovations are distinguished: product innovations, process innovations, marketing innovations and organisational innovations. A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. (Oslo Manual Third edition OECD and Eurostat 2005) Examples of this kind of innovations can be intended to increase quality, to decrease unit costs of production or delivery, or to produce or deliver new or significantly improved products. In 2006 with the coordination of MIPS (Milano) we started to work on the PIM project. It aimed at promoting Process Innovation within East-European SMEs through the development and the validation of an ICT-based system that will support innovation managers in implementing really innovative solutions within local enterprises in order to increase their organisational performance as well as to improve their competitiveness within the enlarged market. As a supporting action, training activities will be carried out to qualify highly skilled Process Innovation Managers (PIM trademark) thanks to the involvement of Certification Bodies belonging to the International Certification Network. PIMs will act as enablers of a widely process innovation diffusion within Eastern European SMEs in order to enhance the enlarged Europe performance worldwide.

The main phases of PIM project are:
- The collection and analysis of European innovation literature, best practices, techniques and tools to set up the structuring of the project Ontology Management System.
- The development of the technological platform allowing Process Innovation Managers to search and retrieve process innovation sources and related information by using Federated Search Engine, Semantic Collaborative Discovery, Natural Language Processing and domain ontology with the main aim to improve key business processes of SMEs:
  - operational processes like manufacturing, marketing and sales, logistics;
  - strategic processes like design, R&D, customer supplier management, supply network management;
  - enabling processes such as HRM, accounting, knowledge management processes
- Large scale Field Trial by involving at least 80 East-European SMEs in the full use of the PIM platform for foster innovation in their business processes.
• The certification of Eastern European Process Innovation Managers through the delivery of training courses according with the main needs of the most important SMEs business processes in terms of innovation management techniques and technological support; this action will spring up from the positive experience of the DISI-Q IST project.

• Best practice development and large scale of dissemination activities dedicated to business process innovation in East-European countries, including also those not involved in the PIM project.

One of the participants of the PIM project is the Innovation management Cooperation Research Center (IMCRC) from the University of Miskolc, Hungary. The Innovation management Cooperation Research Center (IMCRC) started its operation at the University of Miskolc (Hungary) in February 2005. The main objective of the CRC is to help the partner companies and other small and medium-sized enterprises in the region to improve the economic and market efficiency of their innovative and R&D activities relying on the economic and management research capacities of the Faculty of Economics of the University.

Collaboration today focuses on the knowledge perspectives such as sharing, exchanging, and integrating knowledge to overcome barriers to achieve the research goals (Hagedoorn, 1993, Parker, 2000 and Tidd et al., 1997). This paper also will present the results from multiple case studies on managing knowledge through collaboration, in the mirror of the research fields of the IMCRC.

Keywords: Innovation; Process Innovation; PIM project; Hungary; university-industry relations; Cooperation Research; Knowledge Interactions; SME.

1. Lisbon, Oslo, Milano, Miskolc

It is widely recognised that the European Union faces a considerable innovation challenge (ELIMA, PREST, ANRT and Reidev Ltd., January 2006). In order to meet the Lisbon Objectives and compete effectively in the global economy, levels of industrial innovation need to be greatly enhanced – in most sectors, and indeed in most countries. Practically all member states of EU recognise the importance of innovation to their own economic prospects.

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organisation or external relations. Those four types of innovations are distinguished by the Oslo Manual (Figure 1.): product innovations, process innovations, marketing innovations and organisational innovations. “A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.” (Oslo Manual Third edition OECD and Eurostat 2005) Examples of this kind of innovations can be intende to increase quality, to decrease unit costs of production or delivery, or to produce or deliver new or significantly improved products. Furthermore new processes have made it possible to create mass markets for products that were previously the preserve of elites.
In 2006 with the coordination of MIP (Milano) we started to work on the PIM (Process Innovation Managers) project. It aims at promoting Process Innovation within East-European SMEs through the development and the validation of an ICT-based system that will support innovation managers in implementing really innovative solutions within local enterprises in order to increase their organisational performance as well as to improve their competitiveness within the enlarged market. As a supporting action, training activities will be carried out to qualify highly skilled Process Innovation Managers (PIM trademark) thanks to the involvement of Certification Bodies belonging to the International Certification Network. PIMs will act as enablers of a widely process innovation diffusion within Eastern European SMEs in order to enhance the enlarged Europe performance worldwide. One of the participants of the PIM project is the Innovation management Cooperation Research Center (IMCRC) from the University of Miskolc, Hungary (Table 1.).

<table>
<thead>
<tr>
<th>No.</th>
<th>Organization Name</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MIP – School of Management</td>
<td>ITALY</td>
</tr>
<tr>
<td>2</td>
<td>Quality &amp; Reliability</td>
<td>GREECE</td>
</tr>
<tr>
<td>3</td>
<td>Sunera</td>
<td>ITALY</td>
</tr>
<tr>
<td>4</td>
<td>Straight Technology</td>
<td>UNITED KINGDOM</td>
</tr>
<tr>
<td>5</td>
<td>GFI Benelux</td>
<td>BELGIUM</td>
</tr>
<tr>
<td>6</td>
<td>ISH</td>
<td>HUNGARY</td>
</tr>
<tr>
<td>7</td>
<td>Istituto Italiano di Garanzia della Qualità</td>
<td>ITALY</td>
</tr>
<tr>
<td>8</td>
<td>Czech Association for Quality Certification</td>
<td>CZECH REPUBLIC</td>
</tr>
<tr>
<td>9</td>
<td>Slovenian Institute of Quality and Metrology</td>
<td>SLOVENIA</td>
</tr>
<tr>
<td>10</td>
<td>Hungarian Standards Institution</td>
<td>HUNGARY</td>
</tr>
<tr>
<td>11</td>
<td>Romanian Society for Quality Assurance</td>
<td>ROMANIA</td>
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<tr>
<td>12</td>
<td>NSZZ Solidarity</td>
<td>POLAND</td>
</tr>
<tr>
<td>13</td>
<td>University of Miskolc IMCRC</td>
<td>HUNGARY</td>
</tr>
</tbody>
</table>
2. The Innovation Management Cooperation Research Center (IMCRC)

The rapid implementation of research & development and innovation outputs in the economy is indispensable for increasing competitiveness. The reinforcement of the connection between the research and the corporate sectors is one of the most important tasks, including the creation of research and innovation networks between economic players and publicly financed research institutes. 19 Cooperative Research Centres (CRCs) were established from 2001 to help develop closer relations between Hungarian higher education institutions and other non-profit research facilities and the corporate and business innovation sector. This way, the education, research & development and knowledge and technology transfer can be integrated for strategic purposes. CRCs can only be established together with business partners. These research and engineering centres are located at major universities and provide good conditions for higher education to collaborate with industry in order to concentrate their knowledge and resources to create new technologies. The common use of knowledge integrating education and technology is of mutual interest, developing not only company assets, but also university curricula. An additional result of CRCs is that many universities and companies receive an impetus to formulate or reformulate their R&D strategies. The leading institutions of the consortia may only be institutions offering Ph.D. training accredited by the Hungarian Accreditation Board.

The Innovation Management Cooperation Research Center started its operation at the University of Miskolc (Hungary) in February 2003. Nowadays the IMCRC use 140 square meter inside of the building of the University and employs 14 people (6 researchers, 2 administrative staff, 6 PhD students as junior researcher). Beside the IMCRC researchers numerous professors/researchers and undergraduate students of the Faculty of Economics participate in the research projects of IMCRC.

Some authors analyze the relationship between universities and industry on the basis of case studies (for example, the works of Meyer-Krahmer); various publications deal with the problem of how to improve the technology transfer from universities to industry conducted a broad survey at universities on their industrial contacts. This latter survey provides detailed information about different types of university-industry interaction according to disciplinary fields and analyzes the institutional framework. However, the results describe the different interaction forms in a purely quantitative way, and it is not possible to derive qualitative conclusions as to their relative importance. Doris Schartinger, Christian Rammer, Manfred M. Fischer and Josef Frohlich in the Knowledge interactions between universities and industry in Austria: sectoral patterns and determinants show the table 2.
### Table 2: Types of Knowledge Interactions between University and Firms

<table>
<thead>
<tr>
<th>Types of Knowledge Interaction</th>
<th>Formulation of Ideas</th>
<th>Transfer of Expert Knowledge</th>
<th>Potential (face-to-face) Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment of graduates by firm</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Conference attendance with firm and university participation</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>New inventions by university members</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Joint publications</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Infral activities, communication</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Postgraduate supervision of Ph.D. and Masters theses</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Teaching of lessors</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mobility of researchers between universities and firms</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scholarly periods for university members</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Collaborative research programs</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lectures at universities held by firm members</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Contract research and consulting</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Use of university facilities by firm</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Licensing of university patents by firm</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Database of prototypes developed in association</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Reading of publications</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>

Source: Schaminger et al. Knowledge interactions between universities and industry in Austria

All of these types can be found in the practice of University of Miskolc (Hungary). The University of Miskolc would like to play the role of a bridge between the professional sphere and companies through IMCRC.

The main objective of the IMCRC is to help the partner companies and other small and medium-sized enterprises in the region to improve the economic and market efficiency of their innovation and R&D activities relying on the economic and management research capacities of the Faculty of Economics of the University. The main activities of the CRC - based on the integrated model of innovation management - are to make better and condition evaluating analysis, to work out innovation-relevant data-bases and innovation strategies, to make scientific, model-forming and adaptive researches supporting the organizational development, innovation marketing, and knowledge and technology transfer, and to provide professional and scientific services.

The mission of the IMCRC: to help the partner firms and the small, middle-sized enterprises so that they can increase their innovation and Research & Development activity and encourage their economic and market success based on the resources and competence of University of Miskolc and mainly the Faculty of Economics. The strategic aims of IMCRC:

- To solve the problems of partner firms: with the help of Research and Development (R&D) projects
- Contact establishment: between the scientific, research sphere and the developing organization of the enterprises
- Work-out of innovation management models and methods, creation of technological transfer services in connection with overall research programs
- To create spin-off enterprises possibilities
- To use up the scientific research results in PhD. programs, researches, and BSc., MSc. and postgraduate studies

The partners of the CRC are mainly large companies from different fields (producers of consumer goods, chemical industry, engineering industry, IT, and service activities). Collaboration focuses on the knowledge perspectives such as sharing, exchanging, and integrating knowledge to overcome barriers to achieve the research goals. The figure 2 illustrates the relation between the programs of the IMCRC and the innovation activities (as defined in the Oslo Manual) is shown by the IMCRC’s basic framework.

**Figure 2** The House of the Innovation Management Cooperation Research Center

The PIM project could help to fulfill this mission through strengthening the relationship between Hungarian and other Eastern-European SMEs and other professional organizations, such as certifying bodies. On organizational level another usage of the project could be the extension of our coaching activity to a wider range of stakeholders in Hungary as well as on international level.

The project could provide many advantages on individual level as well. As a university we are often criticized as being too theoretical, but the PIM (Process Innovation Manager) project could help our teachers and researchers to implement their theoretical knowledge into practice, and vice versa, use their experiments gained in the project during the classical classroom lectures as examples.

Through the PIM project the teachers and Ph. D. students interested in process innovation management could update their existing knowledge and extend their researches to international level, and the project could provide a wide range of possibilities for publications on the topic. Within the PIM project a fruitful
relationship has been formed with the Consortium partners, which could be a good start for further international partnerships. At the same time after the project closure we would like to offer a PIM training course for postgraduate education, which activity would have financial benefits.

3. Basic Elements of PIM project

PIM intends to promote, broaden and to offer easy and smart access to all the contents (such as information, best practice, tools, experiences, contacts, etc.) useful in supporting e-business and quality procedures in SMEs. The PIM platform will help the Process Innovation Managers active in the PIM project demonstration activities, the SMEs involved in the demonstration stage, as well all the East-European certification authorities (coming from IQ-Net) included in the PIM consortium to foster business process innovation in East-European countries. The main parts of the PIM project are:

- The development of a multilingual ontology (particular attention to the cultural/linguistic differences among countries involved in the project) related to Business Processes Innovation domain. (Figure 3.)

- The development of the technological platform allowing Process Innovation Managers and SMEs in Eastern Europe, to work on an innovative platform. The process of searching and retrieving process innovation sources are sped up by innovative solutions applied in a collaborative environment.

- A set of demonstration activities include:
  - Large scale Field Trial by involving at least 80 East-European SMEs in the full use of the PIM platform for fostering business processes.
  - Training activities for at least 150 trainees.
  - Best practice development and a PIM handbook.
  - Large scale of dissemination activities dedicated to business process innovation in East-European countries.
The main phases of PIM project are:

- The collection and analysis of European Innovation literature, best practices, techniques and tools to set up the structuring of the project Ontology Management System.

- The development of the technological platform allowing Process Innovation Managers to search and retrieve process innovation sources and related information by using Federated Search Engine, Semantic Collaborative Discovery, Natural Language Processing and domain ontology with the main aim to improve key business processes of SMEs:
  - operational processes like manufacturing; marketing and sales; logistics;
  - strategic processes like design; RTD; customer supplier management; supply network management;
  - enabling processes such as HRM; accounting; knowledge management processes.

- Large scale Field Trial by involving at least 80 East-European SMEs in the full use of the PIM platform for foster innovation in their business processes.

- The certification of Eastern European Process Innovation Managers through the delivery of training courses according with the main needs of the most important SMEs business processes in terms of innovation management techniques and technological support; this action will spring up from the positive experience of the DIGI-Q IST project.

4. SMEs in Focus of the PIM Project

Based on their Summary Innovation Index (SII) score and the growth rate of the
SII the countries can be divided into four groups: Switzerland, Finland, Sweden, Denmark and Germany make up the group of "Leading countries". Of the leading countries, Sweden and Denmark show a below EU average SII growth rate. France, Luxembourg, Ireland, United Kingdom, Netherlands, Belgium, Austria, Norway, Italy and Iceland all belong to the group of countries showing "Average performance". Countries "Catching up" include Slovenia, Hungary, Portugal, Czech Republic, Lithuania, Latvia, Greece, Cyprus and Malta. Countries "Loosing ground" include Estonia, Spain, Bulgaria, Poland, Slovakia, Romania and Turkey. Each of these four groups are circled in Figure which shows the current performance as measured by the SII on the vertical axis against the short-run trend performance of the SII on the horizontal axis.

**Figure 4 SII and trends**

Small and Medium Enterprises (SMEs) have an important key role in creating jobs and improving competitiveness and economic growth throughout the Eastern Europe. In fact, they are a key part of national economies, representing about 80% of East-European industrial base. Consequently, their growth and success play a central part within countries' development: it is hence necessary to develop SMEs' standard in terms of learning and training to be dedicated to managers (who can influence the business of their enterprises) as well as their employees.

Educational systems and institutional frameworks, which in the past have not been geared towards the development of the innovation, are encouraging more and more initiatives in this area (M. Harazinova, M. Balaz). The globalisation of the economy and the boom in information technology and e-commerce are all positive factors that can contribute to the development of an enterprise culture, encouraging risk-taking, creativity and innovation itself. Adult education systems are supposed to be adapted to the requirements of SMEs' managers as well as to conditions under which SMEs' managers perform.

According to a national survey of Hungarian Association for Innovation the distribution of SMEs operating in the field of Hungarian industry is as follows:
• 75 percent of them are inactive in (technical) innovation,
• 22-23 percent of them are innovative and
• 2-3 percent that do pioneer work by working out and realising original ideas from the circle of top technology. Less than 2000 enterprises can be classified into this category in Hungary (Fakucs-Papanek 2002.).

The survey also tried to map the circle of innovative enterprises. The authors distinguished three basic types of the knowledge-intensive Hungarian SMEs (Fakucs-Papanek 2002.):
• small SME depending on a large one, when a Hungarian supplier – by special product based on high level knowledge – found his dominant Hungarian or foreign customer,
• local SME of a foreign company, that came to Hungary in order to exploit the national and/or export market possibilities,
• company in Hungarian ownership based on research-development knowledge that found the gap of market.

5. PIM in Hungary

In the first phase of the project a detailed context analysis was made with the aim of full understanding of the working environment of East-European SMEs in terms of business process innovation situation, technological development, knowledge needs and gap of competences. Also considerable element is the full understanding and definition of the SMEs’ requirements in the above mentioned fields of interest.

General characteristics of SMEs in Hungary are follows:
• The number of SMEs is high on account of Hungary’s entrepreneurial traditions, but also because of recent ‘forced’ self-employment.
• The efficiency and productivity of SMEs is rather low.
• Inter-company relations are weak in the SME sector.

The level of enterprise activity is high: the number of small and medium-sized enterprises per one thousand persons is 81.7 compared to the 52.4 figure in the EU. Economic activity varies by region: in Central Hungary the number of enterprises per one thousand inhabitants is 140% of the national average, while in the eastern regions, being in a less favourable position, it amounts only to 70-85%. The reason for the high overall ratio is in part due to the tradition of small private enterprises rooted in the period preceding transition and later the high ratio of forced enterprises (those self-employed who became entrepreneurs not due to an entrepreneurial drive, or business opportunity, but simply because they lost their jobs, and had no alternative employment possibilities).

The efficiency of small and medium-sized enterprises is low, their share of the GDP is 45% (Website of Ministry of Economy and Transport of Hungary) despite the fact that the sector provides employment for 60% of the people employed in the private economy, more than one and a half million people. The share of GDP of this group of enterprises falls short of the European Union average by almost 10 percentage points. The shortfall in the productivity of the domestic SME sector compared to that of large companies is significant. This productivity gap is greater than the average of 19 European countries (The 15 EU member states and Iceland, Liechtenstein, Norway and Switzerland), especially in the case of small and medium-sized companies (Table 3.). There are very few modernised medium-sized enterprises (these are generally suppliers) who can compete with large companies in this respect. The others do not measure up to competitive challenges (Papanek-
Table 3 Productivity per enterprise size

<table>
<thead>
<tr>
<th>Enterprise size</th>
<th>Hungary 2001</th>
<th>Hungary 2020</th>
<th>Europe-19 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>(large enterprises-100%)</td>
<td>Relative value added per employee</td>
<td>Relative value added per employee</td>
<td></td>
</tr>
<tr>
<td>Micro</td>
<td>36%</td>
<td>25%</td>
<td>65%</td>
</tr>
<tr>
<td>Small</td>
<td>56%</td>
<td>65%</td>
<td>51%</td>
</tr>
<tr>
<td>Medium-sized</td>
<td>56%</td>
<td>65%</td>
<td>51%</td>
</tr>
<tr>
<td>Large</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Hungarian Institute for Economic Analysis, Observatory of European SMEs.

The main reasons for the low productivity of the small and medium-sized enterprises' sector are the SMEs' lack of funds and obsolete technology, as well as weak entrepreneurial knowledge and the difficulties in accessing business services and consulting.

Many SMEs do not have the technical skills necessary for the growth of enterprises - e.g. modern management, marketing, environmental and financial know-how. Micro- and small enterprises starting up in the eastern and southern areas of the country face considerable difficulties even in the acquisition of fundamental economic information. Generally basic level entrepreneurial skills are also weak because public education propagates practical economic skills to a relatively limited extent.

In Hungary, inter-company relations are weak, and the absence of co-operation between business and other scientific and educational communities also holds back economic development. The underlying causes, for instance the general distrust accompanying the economic transformation, can be resolved by the stabilisation of the economic, institutional and regulatory system. However, the absence of adequate infrastructure, including the scarcity of information technology and communication equipment, impedes the development of cooperative relations.

Some results of the PIM context analysis in Hungary:
- A person dealing with process innovation/improvement existed in around half the enterprises
- This task was mainly dealt with, together with the other process management tasks, by the top manager of the organization
- Only 13% of SMEs has performed any practices on business process innovation
- Business process monitoring and reengineering were headed knowledge domains
- Definate need to acquire knowledge

The statistical evaluation of questioners given out to SME's in Hungary is presented above. The SME's sample of the analysis was built up as the following combination:
Figure 5: Sample distribution

A big question of the PIM project, that which benefits the SME's gain through participating in the PIM training course and using the PIM platform. The exploitation possibilities are summarized in the preliminary exploitation plan.

6. SME's preliminary exploitation plan in the PIM project

The SME's involved in the PIM project aim at improving the level of products and services implementing new process management solutions based on a process innovation platform and on the training of internal process managers. The exploitation of the PIM will thus benefit on two different levels, on organizational level as well as on personal level in terms of qualified process innovation managers, more efficient processes which would lead to better organizational performance of the companies.

A continuous process innovation results in more efficient processes, cost reduction through process rationalization, and focusing on innovation the competitiveness of these companies will increase within the enlarged market through improving organizational performance.

A great advantage of the PIM platform can be defined on international level by exchanging experiences, information, best practices and tools of SME's through the platform. SME's will get a newly designed and customized ITC tool, which will enable SME's and process innovation managers to search for material and gain knowledge on their own languages. The ontology building will help to form a common language of process innovation by translating the main expressions of the profession into local languages with the exactly same meanings and content.

The training of process innovation managers will give a special knowledge for SME's. Not only individuals and groups need to change the way they think and behave but businesses also need to change their organizational processes and settings. E-learning is the newest way of learning by using the possibilities offered by the informational society, and such training could contribute to the dissemination of such a new way of learning as well as to the popularization of e-solutions in business life even within SME's.

The PIM platform is a good tool to help SME's in their PR activities by offering possibilities for building connections, searching for business partners even for searching after workforces.

Summarizing the above mentioned, in brief the implementation of the PIM
project in SME’s will allow to:

- Improve processes: cutting process costs, managing process performance, etc.
- Connect SME’s: exchanging information, experiences, tools, etc.
- Networking: building business connections, exchanging best practices, using the same solutions, etc.
- Train process innovation managers: gaining special knowledge, emphasizing the importance of innovation, etc.

7. Role of IMCRC to build an Entrepreneurial University

The deficiencies of the national innovation system in Hungary affect the competitiveness of the national economy unfavourably. The institutional and network structures (innovation centres, technology transfer centres, technology incubation houses) linking research & development institutions and companies and establishing the organisation framework of co-operation are missing or underdeveloped. Many results of research & development do not reach the productive sphere or reach it with great delay.

Among other things by the PIM project the Innovation management Cooperation Research Center provide a completely new development path for the university, which will offer the following novel advantages over the developments so far:

- the complex, many-sided relations between the university and its surroundings based on mutual advantages with the unambiguous leading role of the university,
- the enrichment of the financing channels of university academic and research work, in addition to former “single channel” system (Ministry of Education) a multi-channel system will develop in which academic programs and research work are not isolated but appear as parts of an “enterprise” producing knowledge and determining economic-social development.

The entrepreneurial university has the ability to generate a focused strategic direction (Clark, 1998), both in formulating academic goals and in translating knowledge produced within the university into economic and social utility. The university can be a natural incubator; providing a support structure for teachers and students to initiate new ventures: intellectual, commercial and conjoint.

A university in which research results are routinely scrutinized for commercial as well as scientific potential is becoming the modus academic institution. Such an academic institution increasingly has the internal capabilities to translate research results into intellectual property and economic activity according to a predictable metric. (Frieder Meyer-Krahmer and Ulrich Schmoch Science-based technologies: university-industry interactions in four fields Fraunhofer Institute for Systems and Innovation Research, Breslauer Str. 48, 76139 Karlsruhe, Germany)

Behind the formation of Hungarian CRCs the initiating interest of the academic sector can be more strongly detected, than that of the enterprises. As a consequence the financial contribution of business enterprises are at a very low level:

The present impregnation into the university's system does not make flexible operation, efficient management, the significant increase of business actors' trust and therefore the increase of corporate payments possible.

It has to be examined, how it can be possible to form a business model, which is in harmony with the managerial, organizational and legal independence efforts of the already existing and future founded cooperation research centers.
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