From Innovation Management to Innovation Marketing
-Knowledge Management by the Innovation Management Cooperation Research Center

Csaba Deák, PhD
Director, Associate Professor
University of Miskolc, Innovation Management Cooperation Research Center (IMCRC), Miskolc-Egyetemváros,H-3515, Hungary
E-mail: kkkdeak@uni-miskolc.hu

Abstract: To combine industrial work with university resources in a fruitful way so that scientific findings can also be useful findings for practitioners. The study will show that innovation management service, innovational marketing, technology transfer, innovative organizational solutions by an innovation centre within an university infrastructure, consists of a wide and dynamic range of activities combined with a range of diverse and often conflicting stakeholders. 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 innovational and R&D activities relying on the economic and management research capacities of the Faculty of Economics of the University.

Keywords: University–industry relations, Knowledge interactions; Innovation, Innovation marketing, Organisational Innovation

1 The Knowledge Factory

A university may not at first look appear to be the best place in which to undertake research. The primary objective is teaching of students and, even allowing that the students represent the bulk of the future intellectual capital of a country, they are only partly trained and inexperienced. Yet universities are widely seen as being not just creators of knowledge but increasingly as major agents of economic growth. To combine industrial work with university resources in a fruitful way so that scientific findings can also be useful findings for practitioners. The Economist, in a major survey on universities, created the expression the knowledge factory. The governments and industry increasingly perceive universities as

“a major agent of economic growth: the knowledge factory, as it were, at the centre of the economy. In such an economy - one in which ideas and the ability to manipulate them count for more than the traditional factors of production - the University has come to look like an increasingly useful asset. It is not only the nation's R&D laboratory, but also the mechanism through which a country augments its 'human capital', the better to compete in the global economy.”

In the developed countries a large share of R&D work, about 15 per cent, is performed in Universities, but the real significance of their contribution is more considerable, since they conduct the most parts of basic research.

The study will show that innovation management service, innovation marketing, technology transfer, innovative organizational solutions by an innovation centre within an university infrastructure, consists of a wide and dynamic range of activities combined with a range of diverse and often conflicting stakeholders.

2 The Relationship between Universities and Industry

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 Fröhlich in the Knowledge interactions between universities and industry in Austria: sectoral patterns and determinants show the next table:

Table 1 Types of knowledge interactions between university and firms

<table>
<thead>
<tr>
<th>Types of knowledge interaction</th>
<th>Formalisation of interaction</th>
<th>Transfer of tacit knowledge</th>
<th>Personal (face-to-face) contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment of graduates by firms</td>
<td>+/−</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Conferences or other events with firm and university participation</td>
<td>−</td>
<td>+/−</td>
<td>+/−</td>
</tr>
<tr>
<td>New firm formation by university members</td>
<td>+</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Joint publications</td>
<td>−</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Informal meetings, talks, communications</td>
<td>−</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Joint supervision of Ph.D. and Masters theses</td>
<td>+/−</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Training of firm members</td>
<td>+/−</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Mobility of researchers between universities and firms</td>
<td>+</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Sabbatical periods for university members</td>
<td>+</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Collaborative research, joint research programmes</td>
<td>+</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Lectures at universities, held by firm members</td>
<td>+</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Contract research and consulting</td>
<td>+</td>
<td>+</td>
<td>+/−</td>
</tr>
<tr>
<td>Use of university facilities by firms</td>
<td>−</td>
<td>−</td>
<td>−/−</td>
</tr>
<tr>
<td>Licensing of university patents by firms</td>
<td>+</td>
<td>−</td>
<td>−/−</td>
</tr>
<tr>
<td>Purchase of prototypes, developed at universities</td>
<td>+</td>
<td>−</td>
<td>−/−</td>
</tr>
<tr>
<td>Reading of publications, patents etc.</td>
<td>−</td>
<td>−</td>
<td>−/−</td>
</tr>
</tbody>
</table>

Source: Schartinger et al. Knowledge interactions between universities and industry in Austria
All of those types can be found in the practice of University of Miskolc (UoM). There are three special inside organizations in this university which have to deal with collaborative research: Regional Knowledge Center (since 2005), Mechatronic and Material Science Cooperation Research Center (since 2002) and the Innovation Management Cooperation Research Center. While the Regional Knowledge Center based on the knowledge of Faculty of Mechanical Engineering, the Mechatronic and Material Science Cooperation Research Center belongs to two Faculties (Faculty of Mechanical Engineering and Faculty of Metallurgy and Material Sciences) – the Innovation Management Cooperation Research Center builds on the knowledge base of the Faculty of Economics.

3 The Innovation Management Cooperation Research Center (IMCRC)

The Innovation Management Cooperation Research Center started its operation at the University of Miskolc (Hungary) in February 2005. Nowadays the IMCRC use 140 square meter inside of the building of the University and employs 13 people (6 researchers, 2 administrative staff, 5 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.

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 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 primer 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.

4 Mission of the Innovation Management Cooperation Research Center

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 enterprising 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.

**Table 2** Cooperation with IMCRC

<table>
<thead>
<tr>
<th>What <strong>is</strong> IMCRC <strong>considered as a</strong> partner in?</th>
<th>What concrete results of the cooperation with IMCRC <strong>have</strong>?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td>Application of the research results</td>
</tr>
<tr>
<td></td>
<td>Examination of results</td>
</tr>
<tr>
<td></td>
<td>Joint R&amp;D projects</td>
</tr>
<tr>
<td><strong>Medium</strong></td>
<td>Usage of research related services</td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td>PhD programs</td>
</tr>
<tr>
<td></td>
<td>Cooperation in educational activities</td>
</tr>
</tbody>
</table>

**Figure 1** The House of the Innovation Management Cooperation Research Center

5 Oslo Manual and the IMCRC Programs

The Oslo Manual defines four types of innovations that encompass a wide range of changes in firms’ activities: product innovations, process innovations, marketing innovations and organisational innovations. The figure 1. illustrate the relation between the programs of the IMCRC and the innovation activities is shown by the IMCRC’s basic framework.

The IMCRC has 4 main programs:

- **Primer and condition evaluating researches:** analysis of the condition and trends of the region, making forecasts, supporting the regional development strategies and business investment decisions, making practice-oriented information-basis and analysis.
- **Technology-management research program:** innovative competencies, qualification of techno-potentials, effective planning of the main tasks of technology management, innovation strategies, process management, technology- and knowledge-transfer.
- **Innovative organization research program:** development of innovative organizational solutions, human resource management of innovative organizations, process developments.
- **Innovation marketing research program:** innovative products, customer analysis, development of logistic and connection systems, comparisons of Lead Market to relevant markets, network marketing coordination, analysis of diffusion potential, formation of marketing strategies supporting the market success of innovative products.

The activities are often complex, interrelated, interdependent and are characterized by being high risk and extremely dynamic in comparison to other types of organizational development.

While the first two programs are evident, the last two has gained ground based on the Oslo Manual, which is a product of a three-year job of innovational experts of 30 countries. It summarizes state-of-the-art knowledge regarding innovation and its measurement. The novum of the Manual is:

- The scope of what is considered an innovation has now been expanded with two new types: marketing and organisational innovation. They have already been tested in several OECD countries, with promising results.
- The importance of innovation in the less R&D intensive industrial sectors, such as services and the filed of low technology industry.

Furthermore the Manual contains the development of the innovation theory and the main tendencies of practical economic development and a need for a better understanding of innovation procedures. The new definition of innovation is also included:

The definition of innovation procedure includes many complex activities from which R&D is an important factor, but it is not directly connected to a special innovation:

“all scientific, technological, organizational, financial and commercial steps, which practically purpose or manage the materialization of innovation.”
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.

**Figure 2** The innovation measurement framework of Oslo Manual (2005)

The possibility of marketing and organisational innovations creates a more complete framework, that affect firm performance and contribute to the accumulation of knowledge.

**Table 3** Evolution of Innovation Metrics by Generation (Examples)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D expenditures</td>
<td>Patents, Publications, Products, Quality Change</td>
<td>Innovation surveys, Indexing, Benchmarking innovation capacity</td>
<td>Knowledge, Intangibles, Networks, Demand, Clusters, Management techniques, Risk/Return, System Dynamics</td>
</tr>
<tr>
<td>S&amp;T Personnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tech intensity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


6 Marketing and Organisational Innovation

To achieve a full picture of innovation activities, it is necessary to include marketing, organisational and process change methods in the framework. The marketing innovations can be important for firm performance and the overall innovation process.

A defining characteristic of marketing innovations is the orientation towards customers and markets, with a view to improving sales and market share. (Oslo Manual)

The definition of the organisational innovation:

„An organisational innovation is the implementation of a new organisational method in the firm’s business practices, workplace organisation or external relations.” (Oslo Manual)

Basic element is the role of organisational structures and practices that promote the sharing and use of knowledge and interaction with other firms and public research institutions. These also include the forming of closer relationships with suppliers and ongoing development of marketing practices to better reach customers.

Preparations for organizational innovation: Those activities are included, which mean the planning and realization of new organizational solutions.

Organisational innovations can be intended to increase a firm’s performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies.

Figure 3 The Organisational Innovations Model of the IMCRC

Source: The Changing Tendencies of Economic Organizations, where are the borders? Szintay 2004
The definition of the marketing innovation

„A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing“ (Oslo Manual)

This includes acquisition of other external knowledge or capital goods and training that is specifically related to marketing innovations.

It must be taken that technological know-how is less important, than the knowledge of those user’s fields and customers, who show attractive growth potential and a significant advantage of innovative products can be built on them.

The quick transfer of innovational ideas promising success into development projects, the rapidity and time-strategic decisions of its realization and market introduction are essential.

A systematic innovation marketing operated within innovation management is required, which assures that the development of innovative products is customer-oriented. The so called “lateral marketing” can fit with classical marketing tools. (Piskóti 2005)

Grouping marketing innovations with organisational innovations would be problematic because some marketing practices do not fit into concepts of organisational changes and making it difficult to interpret the results.

7 Main fields of the work of IMCRC

Projects of IMCRC for the Partners Started in 2005 are follows:

Basic research: To work out a tool set, which treats the problems of the measurement system of the region’s innovational potential in a complex way.

The following projects were running in 2005 within the further programs:

- Operation rationalization and development on management and executive levels.
- Modeling logistic material flow. Simulation of the optimal location and internal processes of regional centers.
- Efficiency analysis of the liberalization of the letter market, making medium-term forecasting on the market of postal services, exploration of product and service innovation potentials, defining innovative value.
- Typology of the postal operators, determination of potential ways of organization development.
- Formation and testing of a model-method system available to examine customers’ needs regarding complex packaging.
- Search for potential market possibilities and innovative limestone applications.
- Formation of a cardiovascular center.
- Supplier network development.
- Increase of the efficiency of R&D and operational activities done in projects in the field of after market.
- Exploration of the possibilities of market headway and potential segments.
- Formation of the model of efficient B2B sales
- Examination of the innovational possibilities of plastic industrial products in Eastern-European markets, surveying the potentials of growth, sketching the ways of reaching corporate strategic advantages and chances effectively.

• Examination of the introduction and diffusion of healthcare products, potential demand estimation on innovative fields of application.
• Examination of market-potential and diffusion-analysis of process management products (printing and paper products), examination of innovative ways of application.
• Exploration of innovative ways of growth in the field of logistic services.
• Examination of integrated management systems and organization concerning raw material supply and production logistics. Organizational interest synchronization of supply and production processes.
• Modernization of planning and construction method of schedules applied by public transportation companies, development of delivery-based fare system.
• Formation of industrial parks, feasibility study.
• Formation and testing of user-oriented models of waste recycling in the city of Miskolc, defining the marketing tool-set supporting realization.

8 Creating a cluster in the car industry in the North Hungarian region
The purpose of the project is to create a cluster in the car industry for the enterprises operating in the North Hungarian region, that might be the partners of the car factories in Hungary and in it’s neighbouring countries. At the end of the project we create the conditions for the enterprises to meet the representatives of the factories. (For further information: www.imkkk.uni-miskolc.hu/klaszter)

9 Kreaktív® Regional Innovation Competition
It’s an innovation competition focused on secondary school students and university students, who present their new ideas for jury of experts. (For further information: www.kreaktivitas.hu)
The university is an especially propitious site for innovation due to such basic features as its high rate of flow through of human capital in the form of students who are a source of potential inventors. (For further information: www.kreaktivitas.hu)

10 IPW-Innovation management- Project management Workshop to promote the innovation efforts of the North-Hungarian region
One of the main tasks of the Innovation management Cooperation Research Center is to increase the innovation potential of the companies located in the region and to emphasize an innovation approach. In order to encourage this, the IMCRC is planning to organize workshops quarterly, where entrepreneurs, managers and innovation-interested experts may continue discussions within informal frames after professional lectures. The initiation of the IMCRC enjoys the support of the Hungarian Innovation Association and the Project Management Institute. The workshops take place quarterly at a previously determined time.
11 PIM project (this part is based on the PIM project summary)

The PIM project 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.

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.
- 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 to 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 foster innovation in their 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.

Direct Innovation Management Services

- Contact establishment
- Support of patent protection process
- Innovation results’ work-out and transmission
- Information service
- Economic, business and marketing consultation
- Innovation project-planning and management by creating supply

From CrC to an Entrepreneurial University?

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 modal 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.

References


Piskóti I. (2005) Innovation Marketing Program of IMCRC, IMCRC Workshop University of Miskolc


Szakály D. (1997) Innovációmenedzsm ent technológiai transzfer Bíbor Kiadó Miskolc

The Knowledge Factory (1997)- A Survey of Universities', The Economist, 4 October