

COOPERATION IN INNOVATION – EMPIRICAL MARKETING MODELS¹

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Abstract

This study presents that the market success of businesses depends on their innovation performance in the current, increasingly intensive, quickly changing and efficiency-oriented competitive environment. Furthermore, apart from corporate technological competences, the management of relationship networks, co-operating partners, co-operation content and intensity strongly determine the innovation effectiveness. The empirical research into Hungarian corporate practices verifies the positive impact of relationship and network competences. However, this research also highlights the weaknesses of these factors and offers development opportunities and actions to businesses and governmental and regional development organisations. The presentation of the mutual advantages and strategic efforts of the university-business collaboration (UBC) and the limited effectiveness of the cooperation practices need significant relationship marketing support in the future, from both sides.

Keywords: innovation success, relationship/network marketing, university industry collaboration, strategy,

1. Introduction

Besides the technological abilities, more and more the inter-organisational co-operations supporting innovations (Hagedoorn-Link 2000), the effectiveness of this relationship-system, the company's network competences (Ritter-Gemünden 2010) become the key factors of innovation and business success, both in case of small and bigger companies. Innovation is not considered to be a secret of businesses any more. It is a result of multi-element and multi-player co-operation. Innovation success is determined by the ability of a company to manage its relationships and networks in the innovation process. In this relationship-system, university-business collaboration (UBC) plays a special role, helping the exploration of innovation ideas, the strengthening of the effectiveness of innovation processes, well supplementing the enterprises' core competencies. The examination of these relations and their effects on innovation served as a topic for several researches in the past years.

Our study, after presenting the theoretical relations and previous research results as background – within the framework of a survey made among almost one hundred Hungarian enterprises – examines the role and effects of cooperation in the companies' innovation processes, with special regards to the business success of product innovations. The weaknesses, or even lack, of the measured significant effects, correlations refer to the low effectiveness of the present Hungarian cooperation practices. The companies' cooperation barriers are still functioning, the realisation of the possible advantages (Kesting-Gerstlberger, 2014) is stalling.

2. Theoretical background

On the basis of an empirical research conducted in Hungarian among companies (Piskóti-Nagy-Molnár 2013), the researchers formulated that *strategic and process attributes* of a particular company, the proper balance and harmonisation between them are of utmost importance and considerably contribute to the innovation success where strategic attributes have an extremely strong effect on the operation of process attributes. It is even more important to *optimize product attributes* constituting the subject of innovation, which is determined by product advantage, meeting consumer expectations, competitive prices, technologically sophisticated products and the sense of novelty of the innovation. The listed factors have the strongest direct effect on customer acceptance and the market success of innovation. If businesses want to achieve great success through innovation, they should not only optimize their product attributes, but effectively develop and combine operation processes and strategic skills with resources resulting from relationship and network co-operation, since the above mentioned factors also have a considerable impact on innovation and business success.

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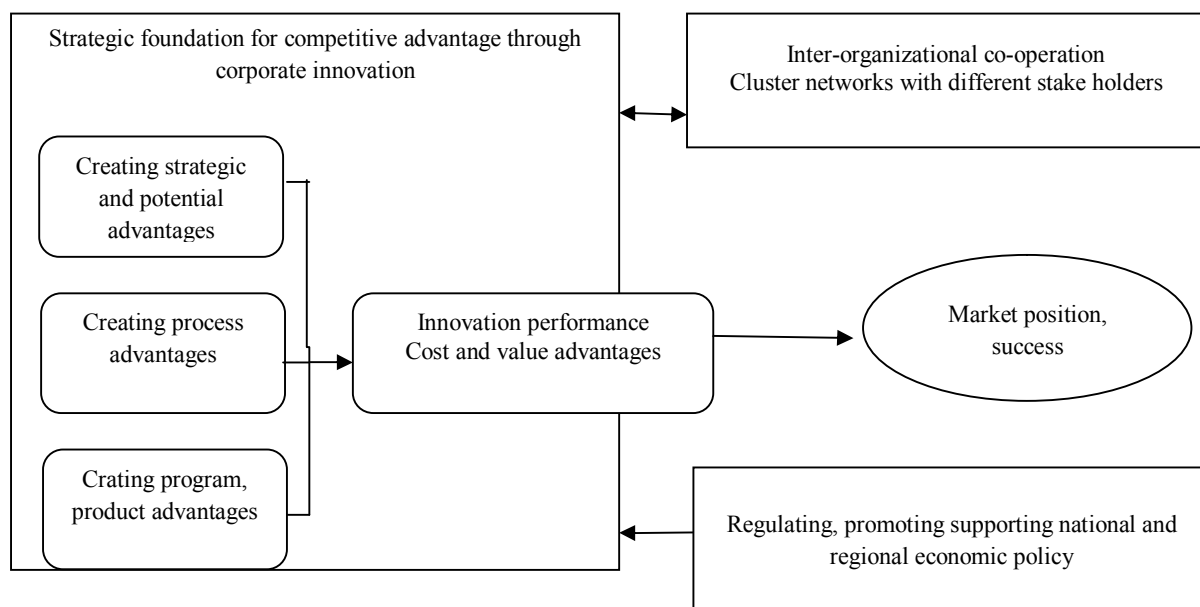


Figure 1: Foundation for innovation-oriented corporate competition –co-operation and economic policy conditions.

Thus, the maturity and efficiency of all three factor groups (strategic, process and product advantages) contribute to market success. This justifies the need for strategic and process-orientation of innovation and marketing-driven product development. The innovation success of businesses determines the international competitiveness and economic position of a particular place and country (Porter 1980). That is why regulation and incentive systems of national and regional economic policy should support the success of innovation performance by increasing the attractiveness of the place, supporting the investments, offering tax incentives and other tools. The past few years justify that the economic policy is expected to give priority to supporting innovation co-operation. This study focuses on the development of innovation co-operation and issues related to networking. This study also presents stereotypical relationship and network types, factors hindering co-operation and possible solutions to network management with a special emphasis on possibilities of creating clusters.

Business relationships can be defined as a process developed by two enterprises or other types of organisations which utilize long-term economic, social, service and technical co-operation in order to cut costs, create new values and take advantage of mutual benefit (Hakansson 2010). Key elements of corporate relationship portfolios (Brandenburge-Nalebuff 1997):

- customer, client
- competitor
- suppliers
- and complementary relationships.

Customer relationships are of utmost importance since customer value encompasses not only profit from purchases, but innovation, image-shaping and co-operation skills, influence on production and development processes are become of increasing importance. Establishing stable co-operation relationship with suppliers considerably contributes to creating sustainable competitive advantage of products in terms of both mutual value creation and cost cutting. As for complementary market players, there are more and more examples on innovation-oriented co-operation relationships with universities, tertiary research workshops and companies, on partnerships with players from civil-society spheres, which promote social responsibilities and sustainability aspects and on co-operation relationships with public administration and governmental organisations. Co-operation with competitors encompasses technological research aiming at determining standards and common representation in international markets. These practices unusual in the past justify the fact that attitude to rivals can be both competitive and cooperative. The trend of cooperative competition is well reflected in the word of 'coopetition', which is a neologism and has become a market and marketing principle.

Meeting connection objectives and aims and their utilisation basically depends on the intensity of proactive approach and the level of initiatives and the way different relationships and situations are managed, directed

and organised. Competences required for relationship management highly depend on the power and dependency of players. Enterprises with a good market position, technological, financial and market power and influence become controllers and managers; smaller and weaker ones are followers and reactors, whereas enterprises with equal power and dependence situations are in a mutual determining relationship.

Businesses mostly unanimously agree that there is a need for co-operation. However, the practical implementation of co-operation is hindered by several factors, especially in the case of small and middle-sized enterprises. Main co-operation barriers are as follows:

- *Low initiative level* that may stem from undesirability of management to invest any time into preparing co-operation and from a lack of financial resources to cover the costs related to this. There are also some prestige factors involved. In addition, there are some concerns regarding companies that may have a larger influence in co-operation.
- *Weak and unsatisfactory partner-seek processes:* Once SMEs have overcome initiative barriers and developed positive approach to co-operation, they face shortage of information required for implementing co-operation (potential partners and potential co-operation opportunities) or get 'locked' in the existing relationships where a comfortable approach and too much loyalty make expansion harder.
- *Choice of partners and its professional establishment* are exclusively business and strategic decisions. To this end, SME managers lack these skills. The formulation of co-operation objectives is sometimes unclear, vague and poorly defined. Co-operation willingness is usually very strong in critical situations when it is hardly possible to formulate conditions and expectations resulting in mutual benefit, which makes developing successful and realistic co-operation difficult. The lack of flexibility and trust to each other makes finding reliable and good partners difficult.
- *Difficulties in implementing:* It is advisable to check each other's abilities and reliability step by step. Appropriate amount of 'management time' should be devoted to developing and maintaining relationships from the beginning of co-operation. Clear co-operation structure, well-defined assignments and thoroughly elaborated responsibility systems, effective and efficient communication and information technologies are required to ensure transparent co-operation to all parties involved.

It is not surprising that co-operation systems are not mushrooming. Networks are set slowly and even if they are set up, they often fall asleep and finally die. In order to achieve success in this issue, there is a need for a solution which ensures the required co-operation abilities and competence by applying a conscious and multi-sided development in enterprises, along the so-called *co-operation model*. Relationships and connections established in innovation processes, development of network co-operation and its efficient operation are of essential importance as it has already been described in the introduction.

3. Connection intensity and clusters in the innovation process of Hungarian businesses

Our empirical research which analysed the innovation success with a questionnaire focused also on the role of connections and co-operation. The primary aim of this research was to create an empirical model of factors affecting the market success of corporate innovations, quantify the correlation between model elements and justify the appropriateness of the model created after the relevant technical literature was studied.

The survey investigated the effects of co-operation forms related to several innovation processes. There are three cooperation types, which are as follows:

- *co-operation of strategic character*, relationships in an increasing number of forms and areas
- *co-operation of operative character* in the innovation process, such as providing information
- *internal co-operation and relationship* with functional areas and organisational units related to innovation implementation.

A questionnaire was used to test our hypothetical models. This method was used because its application is very simple and the collected data are reliable since respondents choose from predetermined alternatives. The preliminary fixed responses reduce diversities of different respondents. In addition, it is very simple to code, analyse and interpret the data (*Malhotra-Simon 2008*). The sample population was made up of companies, which operated in Hungary and conducted R&D there. The population size amounted to 1774 companies. The sample framework, which can be assigned to the research sample population, was the R&D register of KSH. The confidence level of the total sample amounted to 95% and its precision level accounted for ± 9.8 percentage points, the sample size was 94 companies.

The purpose of this analysis was to define corporate network competencies and to illustrate their effects on the market success of innovations as well as correlations between them.

The intensity of innovation cooperation is considered to be low. Apart from research relationship of universities and tertiary educational institutions, consumer and supplier co-operations also emerge. Whereas professional,

entrepreneurial, multi-player cluster types of organisational relationships that go beyond direct business processes can hardly be found. About 50% of the companies cooperate with less than five organisations and only about 18% develop relationship with more than ten partners. It is obvious that every company has broad non-innovation relationship.

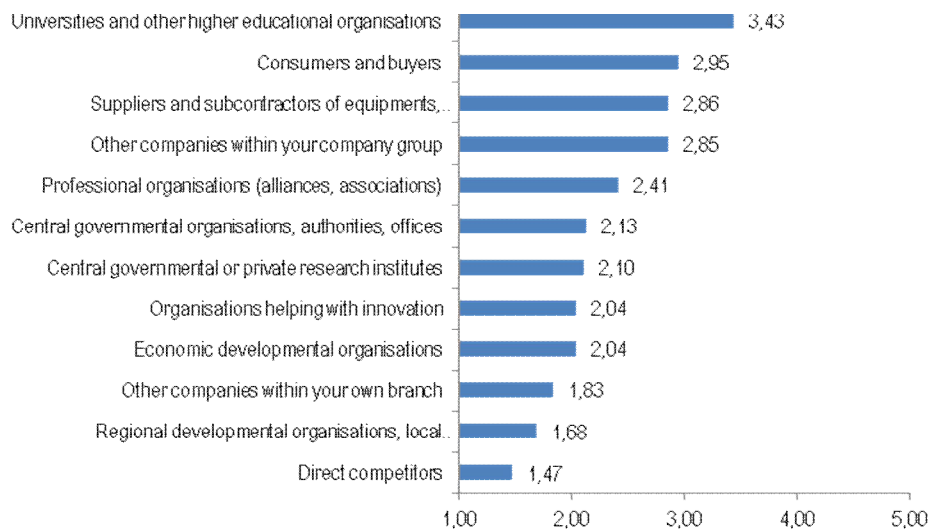


Figure 2: What kind of research and developmental units mentioned below do you cooperate with in your research and development activity and innovation processes?

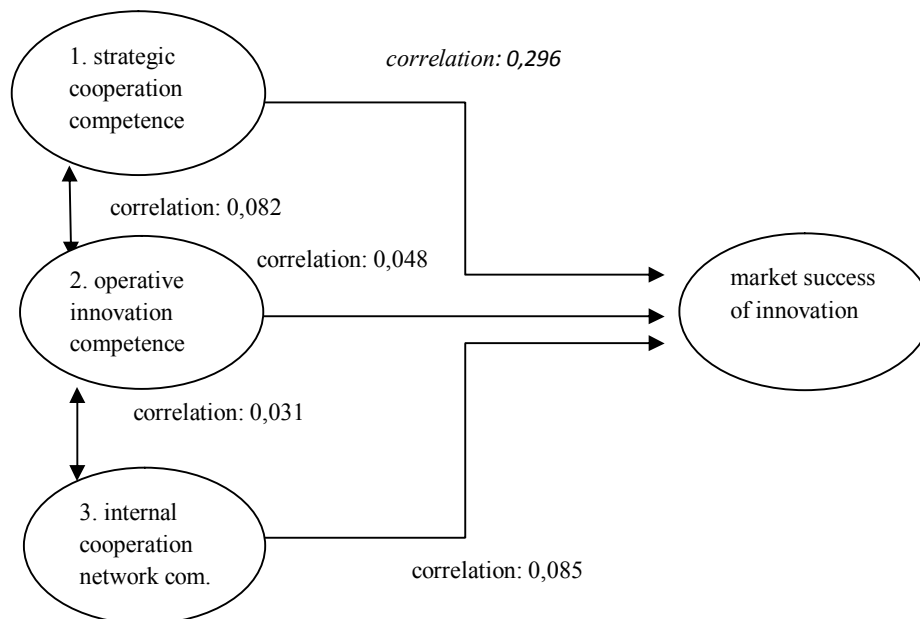


Figure 3: Effect of relationship types on innovation success

As for the types of relationships, only strategic relationships and steady and long-term co-operation show weak and significant correlation, this proves that innovation of companies having many-sided relationships is more successful. The absence of measurable effects of innovation process operative and internal organisational unit co-operation illustrates the weakness of practices and indicates that their effects possibly assert themselves in other factors like product properties and more efficient processes. The findings show that there is still considerable potential hidden in relationship development and practices of Hungarian businesses, especially in operative and direct process co-operations. When looking at the intensity of the respondents' relationships, connections and cooperation taken together, namely, their efficiency and willingness to co-operate with different

market players in market networks, palpable effects like in technical competencies can be measured. In addition, there is a possible correlation between network and technological competences, which enhance each other.

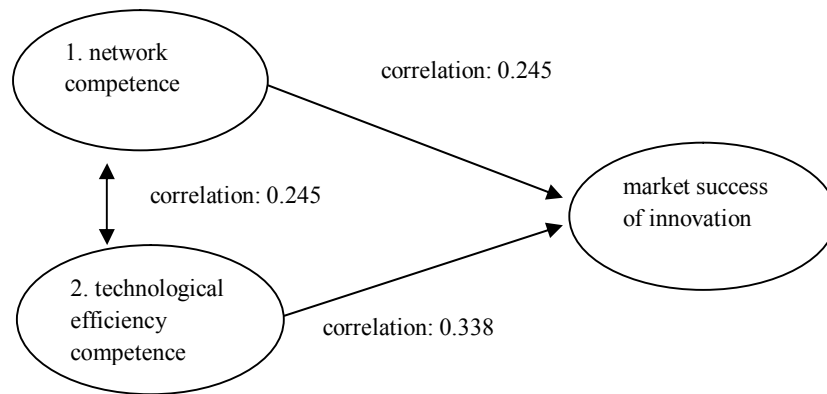


Figure 4: Impact of network and technological competences on innovation success

Co-operation with different players affects innovation success in a different way. To this end, not only should the relationships with suppliers, partners and customers be examined, but the relationships with competitors and the so-called complementary, namely non-market players, as well.

According to our expectations, the strongest correlation was seen in the co-operation between suppliers and customers. Co-operation between competitors was not typical. The impact of co-operation between complementary organisations was weak and insignificant. When the players were examined separately, there was a measurable correlation between organisations supporting innovation and success. Unfortunately, the impact of cooperation with universities and other tertiary institutions was not significantly measurable. This reflects the actual weakness of current practices, namely, that the current Hungarian tertiary education fails to exploit its relationships and connections with industrial sectors and this relationship is very inefficient.

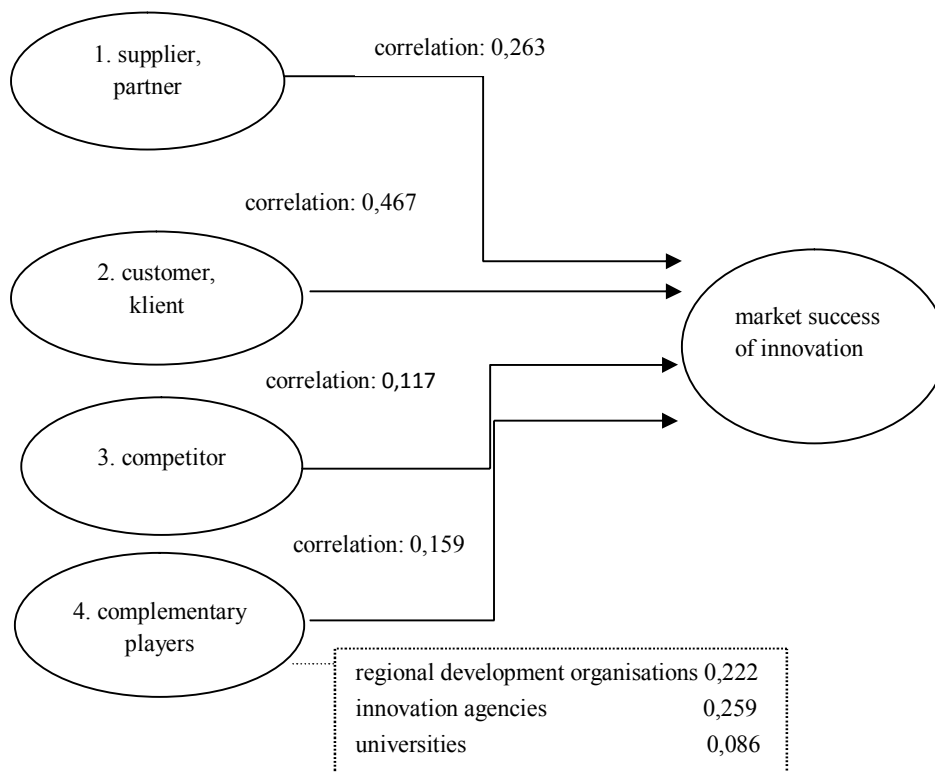


Figure 5: Impact of relationship types on innovation success

University-business co-operations, at the same time, provide – in theory – several multi-sided possibilities, both for the individuals and the organisations, together with their regions.

Table 1. Potential advantages of UBC

Advantages for business actors	
Knowledge returns	new knowledge, recognition and development of new technologies, optimising of products-services and processes, better market information
Reaching and increase of social capital	trained staff, employment of persons with PhD degree, reference and image effects in further co-operations, market and social judgement
Advantages in the operation of organisational functions	decrease of research costs, decrease of process costs, decrease of innovation and management risks
Advantages for universities	
Marketing effects	higher security and acceptance of institutional activities in public opinion, reputation returns, increase of image by successful transfer activities, strengthening of legality, increase of opportunities for further orders, increase of incomes
Organisational competence effects	increase of organisational operation effectiveness and social utility, new know-how, practice orientation, strengthening of cooperation potential, reaching of new knowledge and information, increase of development sources
Building of strategic partnerships	continuous building of strategic partnerships, support of internationalisation, increase of social, economical and regional embeddedness, both in institutional and organisational levels
Potential advantages for scientists	
External effects, reputation	increase of reputation in professional circles, increase of notoriety among potential partners, building of relations and co-operational networks
Educational and research advantages	building of cooperation results into the development of education, strengthening of the integration of research and education, strengthening of the students and PhD students, valuable project results, new practice oriented knowledge, their utilisation in scientific publications
Financial advantages	increase of research and order incomes, strengthening of financial flexibility
Potential advantages for students	
Development of individual competences	personal competences, activity and realization abilities, professional and methodological competences, social and communication competences
Impulses for individual innovations, foundation of own enterprise	inspirations, ideas and research initiatives with student participation
Development of own partnerships and networks by external relations	formation of relations and attachments to future employers, professional organisations, chambers, alliances, etc.
Potential effects on regional development	
High education networks as the motors of regional development	support of regional management, strengthening of cluster management, universities as coordinators and connecting elements of innovation networks
Strengthening of investment plans and intentions	strengthening of synergic effects of regional innovation centres, settling of innovative companies, foundation of spin-off companies with the participation of universities
UBC networks as tools of regional technological and labour market policies	development of educational and training offer for companies in the region, strengthening of technological and innovation expertise for SMEs
Long-term and sustainable development initiatives	complex solutions for regional social and economic problems on the basis of university know-how, development of such competences of the companies in the region
Knowledge and technology transfer cooperation between regions	utilisation and widening of existing competences in co-operations with other national and international regions, development of regional innovation system by international projects

Source: own compilation after Kesting 2013 and Baaken 2009

Potential cooperation advantages provide wide range of strategic (long-term) and operative (short-term) possibilities. Their utilisation, its width, diversity and intensity depends on the strategic ambitions of the particular organisations – also determined by market demands and their own starting abilities. Companies usually follow one of the strategies below, when interacting with universities (Dunowski et.al.2010: 11p):

- *Exploration Strategy*: The focus is set on collaborative research and strategic foresight to explore new technologies and generate valuable knowledge.

- *Exploitation Strategy*: These companies want to conduct collaborative applied research and mainly find solutions for given problems, save costs, minimize risks and also collaborate for recruiting or marketing purposes.
- *Ambidextrous Strategy*: Companies combine both exploration and exploitation strategies.

Our research results show that the positive effects of UBC just rarely appear in the Hungarian companies' strategic intentions and in the increase of the effectiveness of innovation; the present relations tends mainly towards occasional cooperation, and rather towards image building than the increase of direct business and market success.

The strategic efforts of universities are significantly determined by – besides the roles of possibilities, organisational and personal potentials and abilities – their approach and cultural elements and the environment. We can separate five motivation strategic types – all mean specific development phases at the same time:

- cooperation as further income and financial source orientation approach,
- cooperation as image increasing factor regarding schooling,
- cooperation for the sake of the development of education, increase of its quality level and practice orientation,
- cooperation for the increase of the effectiveness of research activities,
- cooperation for the institute's regional, social and economical embeddedness, development contribution and reaching the relating targets.

The research results – from the university side as well – show that mainly co-operations for short-term income increase, and participation in image oriented, not well-based project participation is typical; only conscious universities with well-based institutional and market strategy can be characterized by complex cooperation with deep professional content.

The bilateral character of cooperation is a frequent reason of the relatively low effectiveness of UBC. Network, multilateral and integrated co-operations can only slowly be strengthened; on the other hand, more and more innovation clusters are founded which can gradually become significant actors, integrators of the organisation of co-operations.

4. Clusters in innovation processes

The measured correlation between the cluster membership of businesses and innovation success is weak (0,168), which indicates used practices and low direct efficiency.

In the world of increasing innovation challenges, a cluster, as a conscious and coordinated co-operation and collaboration of producers, manufacturers, service providers, suppliers research and training institutions and other professional organisations, has become an increasingly important factor, since it helps abolish co-operation barriers and enhance co-operation efficiency.

Clusters are usually of dual character. On the one hand, they generate a specific contribution to a particular economic sector and value creation processes of an area by linking professional activities of certain enterprises and establishing synergistic effects. On the other hand, clusters are generally built on the geographical proximity of partners involved and result in economic recovery and development of backward areas. International experience and empirical research indicate that corporate innovation activities are more effective in co-operation environment conducted within the framework of a cluster than in an isolated environment.

More moderate cooperation practices of companies in R&D and innovation processes and their less deep differentiated character show that a *more opened model* of innovation that has been applied in international practices more and more often does not seem to be used in innovation clusters. Clusters as innovation sources are becoming increasingly important in the international field. Manufacturers, service providers, suppliers, research and educational institutes and others significantly contribute to the value forming process of a given area. Enterprises are more successful if they rather cooperate more effectively than operate in an isolated way. The extent of their success highly depends on the activity of the enterprise. The above mentioned factors provide favourable conditions for the so-called *open innovations*. It is obvious that Hungarian clusters also have to undergo some changes if they want to become successful. They have to change their economic logic and focus on specialisation. Clusters can provide a starting advantage for enterprises and innovations. Therefore, they can be created not only in old and traditional, but in new geographic premises as well, for example, by outsourcing activities. Strong clusters can benefit from advantageous cluster-specific premise conditions [competitive environment, (incentives, taxes, competitiveness and competitors) demand conditions, suppliers, service

providers] and availability of labour force, know-how, research institutes and venture capital. Professional relationships, the intensity and extensity of consciously built and organised cooperation activities within organisations as well as external co-operation play an essential role in a specific development process. R&D, production, sales and marketing organisations play a dominant role in product development and planning activities. However, employees from other areas, for example, from logistics, customer service, human resource units are involved in these activities less.

The positive effects of greater strengths of clusters are experienced in several areas, such as:

- Clusters may become *resource pools of creative ideas*, since a lot of excellent experts with diverse and value creation ideas meet when clusters are operated. Unexpected information, spurred ideas, opinions about different activities may also contribute to innovation.
- *Research costs of innovation can be reduced considerably*, since stakeholders can build and test prototypes cost efficiently.
- Clusters provide bases for *testing the market potential of innovations* and for rapid feedback from partners.

Developers and public administration of regions and places all over the world make every effort to improve premise infrastructure and facilities both for existing businesses and for potential investors with special emphases to innovative enterprises. Clusters also play a determining role in this process by adapting their roles and solutions to market demands and professional challenges:

- Clusters *ensure start-up advantages* to investors and businesses and offer them opportunities for growth by outsourcing activities not only on old industrial premises, but in new geographical locations as well.
- Clusters should *specialize* in particular business activities not only by classical sectors of industry, but by new technologies, topical economic issues and social behaviour such as informatics, environmental protection and sustainable life style clusters in order to perform a more targeted and efficient expansion.
- It is interesting to observe that innovations built on scientific research are always more geographically concentrated than economic innovations in a broad sense, perhaps because of cluster interconnections,
- The more specialized clusters are, the more companies are forced to ensure co-operation required for different competencies in different geographical locations.
- Strong clusters attempt to maximally exploit cluster-specific premise conditions (competitive environment (incentives, taxes and competitors, demand, suppliers, service providers), workforce, know-how, research institutions, risk capital and so on.

The presence or lack of clusters considerably affects economic attractive forces of a particular place or a city and the value of premises. (Ketels 2005) The objective of the economic policy is to stimulate the establishment of clusters by applying different instruments and to promote co-operation competence of businesses in this direction.

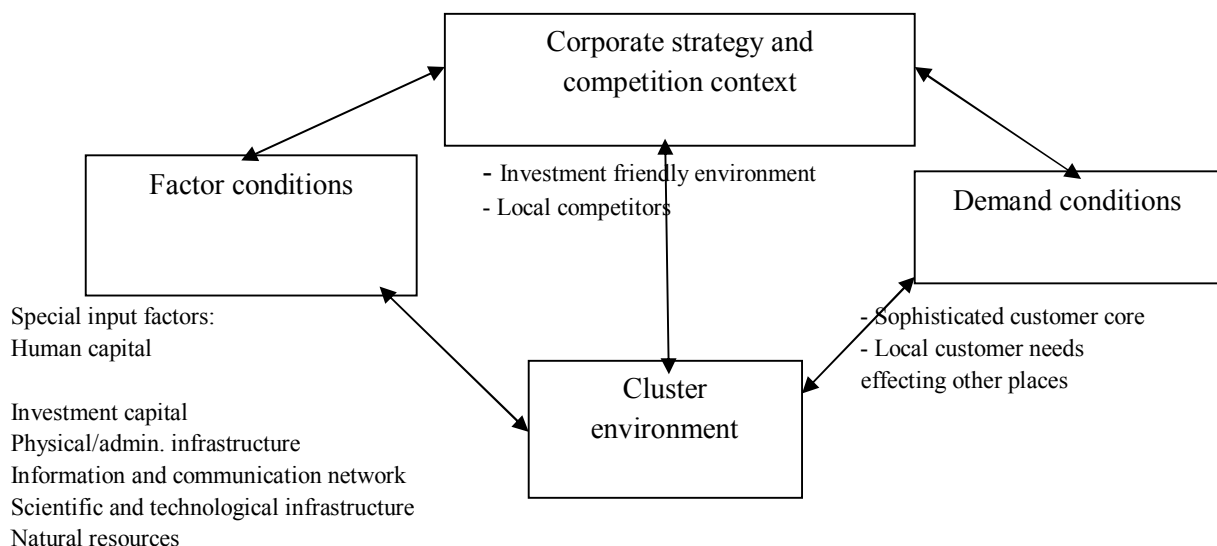


Figure 6: Criteria of good premises

The economic policy of both the European Union and the Hungarian government is aimed at supporting the establishment of a cluster management organisation and the performance of its organisational, concept-creation assignments.

5. Conclusions, implications

International experience, conducted research and our primary preparatory analysis in this issue reveal that the more considerable the network competence is, the greater innovation success new products and processes have. This positive effect, which is also present in practices of Hungarian companies, still have unutilized potential in terms of the content of operative relationships, limited composition of co-operating circles and intensity of relationships. Businesses, complementaries, primarily tertiary educational institutions and professional organisations could take greater advantage of the operation of co-operation barriers and the lack of preparation.

All this further increases the importance of clusters and their organisational role in developing relationships and requires support from governmental, regional development and economic policy institutions. In the next phase of our research we attempt to conduct an in-depth analysis of sector-specific characteristics and divergences as well as to examine the impacts of particular forms and areas of co-operation. This study will also investigate further development and improvement of motivation, interest systems, and possible co-operation strategies of universities.

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