Modelling cross-border regional network for innovative development

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The article provides detailed presentations of entities and functions of the Cross-border Regional network for innovative development, the manner and methods of its functioning, and its significance for enhancing university-industry cooperation in innovative development. Special attention was devoted to proper implementation of the Triple Helix concept in the development of an innovative network.

Keywords: Innovation, regional network, model

Introduction

According to the most general definition of networking, provided by van Aalst (2003), the term "networking" refers to the "systematic establishment and use (management) of internal and external links (communication, interaction, and co-ordination) between people, teams or organisations ("nodes") in order to improve performance".

Networking does not represent a new social need, but an easier way of fulfilling such needs. A network can be depicted as shown in Fig.1., where picture illustrates nodes constituting a network based on a common problem area, governed by a set of rules which apply to all nodes. Each of the nodes had its position and effect on society even before the network was established. By establishing a network materialized through associations formed among the nodes and their joint approach to environment, social influence of the network becomes greater than the simple sum of influences that nodes had before the network was established. This holistic approach is exactly what strengthens the network, its social impact, and represents the crucial motive for its establishment and survival.

From the standpoint of business organizations, the importance of networks cannot be observed beyond each business entity’s prime objective, its subsistence. As the key quality for subsistence, competitiveness becomes dependent on the aptitude for applying new knowledge and technologies in a knowledge-based economy. However, with the globalization of the market, increasing competition and the rapid development of knowledge, new technologies and innovative concepts emerge from even more sources, most of which are beyond direct control of specialized organizations. They have therefore become focused on their main activities, and are forced to obtain additional knowledge and know-how by mutual arrangements, through equipment purchases, technology licensing, or in similar ways. Such trends elevate the importance of networking, rendering it a precondition for organizations to attain competitiveness. Collaboration within a network has become by far the most important channel for knowledge sharing and exchange.

Having analyzed the impact of networks on business organizations, it can freely be said that small and medium enterprises (SMEs), even more than large businesses, depend on network information and distribution of knowledge and technology for developing their own innovative capacity and conquering the market. Although
different types of small and medium businesses have different needs, all of them need to be connected to sources of new knowledge and expertise, whether directly or via innovative networks. Surely, networks open new possibilities through multiple communicational streams and create conditions for innovative organizations to connect with others on a regional, national and global level.

These claims are supported by empirical studies. It has explicitly been recognized that networked organizations are much more innovative than those that do not belong to networks, regardless of their size. In addition, it was found that companies’ propensity be involved in a network, based on knowledge, decreases in accordance to their size. This indirectly represents a confirmation of small and medium businesses’ innovative limitations, and points to their need for discovering alternative means of improving competitiveness, primarily though networking.

**FIGURE 1. SOCIAL EFFECTS OF A NETWORK**

![Diagram of social effects of a network](image)


It is certain that organizations, especially small and medium businesses, are incapable of building a favourable environment for establishing networks intended for expediting knowledge distribution and improving competitiveness by themselves. For that purpose, the creation of suitable conditions and incentives for establishing and active functioning of innovative networks can be considered to be the crucial social task. All instances of society should be actively engaged on fulfilling it, from the government apparatus, which should establish legal directives, down to knowledge bearing institutions such as universities and research institutions. Only by a common, broadly established action can innovative networking begin to provide benefits to both single organizations and to the society as a whole.

Although cooperation is a more common phenomenon than innovation, expedited development and diversification of innovative networks represent key features of structural changes in microeconomic bases of economic growth for two reasons. First, networking is amongst new forms of organizational models, management practice and methods of operation, which represent a precondition for technological innovation since they enables businesses to: manage the increasing interdisciplinary of today's technical change; reduce the risk of investment in innovation and link innovation with demand. Second, networking plays a
significant role in its own right, as a form of organizational innovation which acts as a source of value added and flexibility, particularly in the services sector.

Networks can also be perceived as an instrument for enhancing cooperation among business organizations and numerous institutions included in the innovative process: universities and other institutions for higher education, private and public research institutions, providers of consulting and technical services, non-governmental organizations etc. Triple Helix concept, presented in Fig. 2, is based on interactions between three categories of participants: university, industry and government, and represents a key to innovation for the development of a knowledge-based society (Etzkowitz and Leydesdorff, 2000).

**Figure 2. Triple Helix of Innovation**

![Source: Tumbas, P., Matković, P., Sakal, M., 2012](image)

As a result of interacting by using the Triple Helix concept of innovation, each of the categories of participants gains certain benefits of innovative development, and so does the whole Triple Helix model. Cross sectioning the Triple Helix, built out of relatively independent categories of participants in an innovative model, produces diversified (hybrid) organizations, such as technology transfer bureaus at universities, business incubators, centres of excellence, technology platforms, technology parks at universities, government research labs, business and finance supporting institutions and others (Smedlund, 2006).

**Network for innovative development**

Networks play a key role in supporting innovation and development, and should therefore be perceived as structures aimed at supporting innovative organizations. Networks do that not only by spreading good practices, but also by overcoming isolation of organizations and the traditional hierarchical system structure. Networks not only ease innovations, but can also themselves represent innovations by offering possibilities for realizing new manners of operating.

Networks can provide resources for facilitating innovation and change, and also contribute to major reforms. They offer the potential for re-tailoring the intermediate level by promoting various forms of cooperation, networking and multi-functional partnerships, often referred to as "crossover structure." In this sense, a network enables its partakers to implement associations and synergize...
their activities on common priorities. The main focus of the system is not to achieve control, but to take advantage of interactive potentials of systemic forces.

Regional Network for Innovative Development was formed by signing the Consortium Agreement on March 3, 2011. Signing the Agreement was the formal initiation of the first stage of cross-border network development lifecycle. The Consortium is open and all the organizations from the sector of university, industry and government within the cross-border region can join it.

The primary goals and assignments of the Network are to:

- develop and support the improvement of innovative approach to economic development for the purpose of enhancing competitiveness and developing of a knowledge-based economy in its target region;
- facilitate realization and protection of its members’ common interests and needs in the domain of innovative development and transfer of knowledge;
- establish a unique system for informing its members on all topics of interest for accomplishing innovative development and transfer of knowledge, based on the triple helix – cooperation between university academic (educational, research and development institutions), industry and governmental organizations;
- develop innovation portal;
- advocate and protect the interests of the organization before government bodies, business and other organizations;
- provide expert and advisory assistance to its members and all parties interested in innovative development, application of new technologies and equipment, entering new markets, using contemporary ICT solutions and improving their organization of business;
- initiate and support the development of enterprises based on innovations and transfer of knowledge and technology, using international experience and achievements for that purpose;
- cooperate with organizations and associations in the country, the countries in the region and with European and international associations, with which it may jointly act for the purpose of innovative development of the target region;
- monitor regulations, existing situation and current problem in the domain of innovative development;
- be engaged on setting standards and rules in the field of environmental preservation and protection, as well as applying them;
- be engaged on improving public informing;
- be engaged on improving the informing of wider audiences about the organization and implementation of marketing activities as well as performing publishing, promotional and informational activities in the field of innovative development;
- publish various publications, newsletters and promotional materials; and
- arrange education and training of network members’ representatives and other interested parties by organizing courses, seminars, workshops, study tours and specific training in cooperation with institutions for research and education, all for the purpose of educating members and other individuals on innovative development and transfer of knowledge and technologies.

Partners in the project have come to an agreement that the Association "Network for Innovative Development" from Novi Sad, founded on July 20, 2011, will be entrusted with coordinating and managing the network. This association, founded by the University of Novi Sad, will execute network activities for members from Vojvodina region, while DAR Non-profit Közhasznú Kft Szeged will execute
network activities for Hungarian members of the network, that is, members from the South Great Plain Region. By joining a consortium on a regional level, one automatically becomes a member of the Cross-border Network for Innovative Development.

Regardless of the above, it is possible to join the Regional Cross-Border Innovative Network without joining regional or national networks of Serbia or Hungary. Wider cooperation was facilitated this way, placing regional interests, rather than regional affiliation, as the basis of networking.

In order to reach possible benefits, the Regional Network for Innovative Development consisted of two networks in South Great Plain region (Hungary) and Vojvodina region (Serbia), along with the specialized organization for coordination and management – Network for Innovative Development, must carry out numerous activities for the purpose of efficient development and continuance in the following period.

**Figure 3. Regional network for innovative development – Vojvodina Region**

![Diagram of Vojvodina Network for Innovative Development](image)


The identified potential members of the founded Network for Innovative Development, as shown on Fig.3., only represent the initial presupposition for its successful establishing and efficient functioning. These are:

**NETWORK ENTITIES FORMING THE GOVERNMENT CATEGORY:**
- Republic ministries and institutions;
- Intellectual Property Office;
- Provincial Secretariats and Institutions;
- National Agency for Regional Development and Regional Development Agencies.

**NETWORK ENTITIES FORMING THE UNIVERSITY CATEGORY:**
- Institutions for higher education – universities, faculties and scientific institutes
- University research centres
- Science and Technology Park
- State owned scientific institutes
- Institutions for scientific research: Branch of the Serbian Academy of Sciences and Arts; Vojvodina Academy of Sciences and Arts; Matica Srpska.

NETWORK ENTITIES FORMING THE INDUSTRY CATEGORY:
- Business organisations and enterprise research and development centres

NETWORK ENTITIES FORMING THE INTERMEDIARY ORGANIZATIONS CATEGORY:
Financial intermediaries:
- Capital Investment Fund of Vojvodina
- Development Fund of Vojvodina and
- Vojvodina Investment Promotion.
Professional associations:
- Association of Inventors of Vojvodina;
- Association of Inventors and Innovators;
- Association of Professional Societies and Associations;
- Vojvodina Chamber of Commerce and regional Chambers of Commerce.
Business associations:
- Clusters
- Business incubators
Networks:
- Enterprise Europe Network - Serbia
- European Entrepreneur Network / Serbian chapter
- Serbian Association of Employers
- Vojvodina Association of Employers.

University - industry cooperation

The collaboration between the university and the industry is a growing trend and is strategically important to the partners (Austin, 2000). The university and the industry have mutual interest in interaction (Austin, 2000; Baba, 2006). Their natural strategic interest is crucial for building a close international cooperation which would facilitate knowledge transfer from the university to the industry by means of mutual learning. In cooperation, both parties combine their resources to share costs and risks, to produce a cooperative research and to achieve an access to the competencies, resources, knowledge of the partner (Tretyak and Popov, 2009).

Generally speaking, university collaborates to educate experts for the industry and to raise external research funds, while companies collaborate to acquire and develop technology and products by applying the knowledge produced on universities.
There are numerous forms of cooperation with indisputable benefits, but the reasons for cooperation are very diverse. Although there are clear benefits for the university and the industry from the interaction, their basic purposes are different, i.e. the university is focusing on developing science, testing theories and assumptions, producing theories and models, which explain and predict reality, while the industry is looking for “useful artefacts” to be applied in reality (Henderson, McAdam and Leonard, 2006; Gomes, Hurmelinna, Amaral, and Blomqvist, 2005).

However, having these different basic purposes the university and the industry support each other, e.g. the industry is “outsourcing verification activities to their partner university but allows the university to benefit since the enabling capability generates new knowledge that allows them verify their previous discovery work” (Dooley and Kirk, 2007). University-Industry cooperation represents a basis for reaching innovations, developing new products, improving research and development (R&D), producing new knowledge, faster transmission of discoveries of research from lab settings onto the market, as a source of competitive advantage. Therefore, cooperation has a significantly positive impact on economic development and performance of associated organizations, as well as on their innovations’ productivity and knowledge creation.

Conclusion

Networks for innovative development have important roles and are of significance for enhancing University-Industry Cooperation. The importance of implementation of intermediary functions and creation of conditions for different forms and manners of university–industry connections should be particularly highlighted. These are various and numerous forms of cooperation, which all have a purpose, advantages and disadvantages and are applied where circumstances are favourable.

A network should provide information regarding potential partners on sides, their preceding activities and attained results in particular fields, as well as mechanisms for their cooperation. A network should create conditions for connecting university and industry, regardless of the differences in the organization culture, organizational goals, organizational structure and the language in use. In addition, a network should assist the collaboration regardless of the difference in goals and interests set and incompatibilities in their goals. Universities produce tacit knowledge, abstract, complex and ambiguous information in long time periods; meanwhile the companies need an explicit knowledge, which can be directly applied. The companies are pursuing profits and action oriented outcomes, while the universities look for the science development and research based outcomes (Henderson, McAdam and Leonard, 2006; Gomes, Hurmelinna, Amaral, and Blomqvist, 2005).

References


