SUCCESSFUL FACTORS FOR DEVELOPING BUSINESS NETWORKS IN LIFE SCIENCE: A CASE STUDY FROM CLUJ COUNTY, ROMANIA

by

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ABSTRACT

The main objective of this paper is to present and compare different types of approaches and tools applied in the process of developing business networks and clusters in life science, in order to identify those successful factors which can be used for others initiatives. We make a comparative analysis of the Supply Chain Management concept and actual inter-firm cooperation networks and clusters. We also analyze two good examples of life science business clusters from two European regions: Valencia and Malopolska. Based on their key features, tools and results, we discuss the main factors that contributed to successful clustering and networking in life science. We analyze the effectiveness of some methods of business networks development, identified in the process of business network development in Cluj County. We point out the principles which have been used for developing the SMEGoNET business network for life science small enterprises from Cluj County. Based on experience and knowledge gained from the project, the conclusions focus on reinforcement of transfer of research results, development of scientific and technological culture, transition from project-based organization to more membership-based organization, and highlight the factors that should be taken into consideration when managers decide to become members in a business network.

KEYWORDS
Business, Cluster, Supply Chain Management

CONCEPTS OF SCM (SUPPLY CHAIN MANAGEMENT) AND INTER-FIRM COOPERATION, NETWORKS, CLUSTERS

In the actual knowledge-base economy new key driven factors for businesses have appeared – innovation, branding, know-how. They are important for all industries and generated new forms of cooperation networks, focused on competitiveness increase. The Supply Chain Management concept has become common in many fields and industries, due to competition intensification and vertical integration, necessary to apply innovations and to be innovative in the market, and due to its important role in managing cost for companies or for the entire supply chain. SCM is linked to the "value chain" theory proposed by Michael Porter in 1985. Thus, the supply chain comprises all supplier companies, manufacturers, distributors and, some times, even end-users in a complex network, able to supply in market a final range of products, based on core business activity and through control over the raw materials, logistics, information, capital flow and final products (Lambert et al., 1998).

The main objective which brings together all members in the supply chain is the competitiveness increasing. According to various studies (Romano & Vinelli, 2001; Sahay et al., 2006), each entity member of the supply network could improve his ability to meet efficiently customers' expectations through co-management of quality and supply chain practices. Additionally, in order to gain more competitiveness, companies are more interested in cooperation. After Alfred Marshall identified inter-firm cooperation and defined industrial district (1890), Michael Porter gave to this phenomenon a new approach in industry cluster, which he defined as a large number of interrelated enterprises in the same geographical area and industry, promoting specialization and technological innovation (1985). Networks of firms are specific types of structure, created for active collaboration, which can be open-ended or focused on a specific project task. Cluster is a specific type of network that is concentrated in a geographical area. Clusters and networks share some

common features. Conceptually, both are located between uncoordinated and organic structure and the linkage among actors of them is beyond the price mechanism of the market (Learch F. and Müller-Seitz G., 2012)

TABLE 1
COMPARATIVE KEY FEATURES OF CLUSTERS AND NETWORKS

Clusters	Networks
Platform for collaboration	Platform for collaboration
Broader objectives: to raise competitiveness, to create collective visions	Narrower objectives: to share common business or project goals
Generate demand for more companies with related capabilities	Can help companies engage in complex production
Attract specialized services to a region	Allow access to specialized services at lower costs

source: authors' synthesis based on Learch F. and Müller-Seitz G., 2012

Even if SCM and industry cluster represent two different concepts for the business and economic activity, in terms of form and content, important links between them have been determined (Xiaoqiang H., 2009), which make them important to enhance the regional economic competitiveness.

- industry clusters have vertical specialization and horizontal scale in the value chain
- cluster is the geographical concentration of the supply chain because is difficult to find out a supply chain concentrate entirely on a narrower location
- an industry cluster offers a good operational environment for the supply chain.

SUCCESSFUL KEY FACTORS OF LIFE SCIENCE CLUSTERS AND NETWORKS

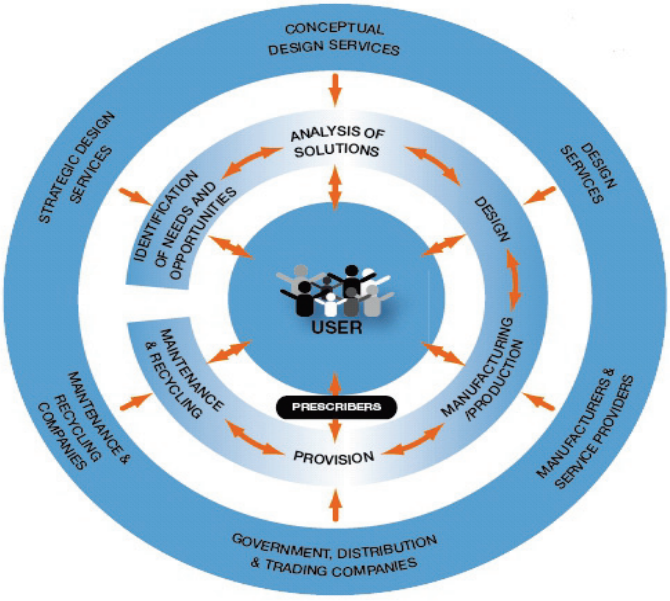
Valencia Cluster

In 2006, with the support of Generalitat Valenciana and Instituto de Biomecanica, CVIDA Association (Quality-of-Live Association) started its activity. As cluster, has brought together companies and institutions that contribute to people's health and wellbeing. Currently, CVIDA includes around 120 members, 66 manufactures and suppliers of products and services in biotechnology and biomedicine and 54 research institutes and institutions. They are committed to implementing innovation technologies and services for the improvement of quality of life.

The main value promoted by all members of CVIDA is quality-of-life care. The cluster initiative benefits of a large and complex experience in quality-of-life care sector from Instituto de Biomecanica, a leading technology and innovation centre in the field. The institute gives direction and added value through its area of interest and specialization: automotive and transportation, elderly people and ageing, health care technology, occupational health and safety, rehabilitation and personal autonomy.

An important innovation model was created inside the cluster and was promoted as a successful factor for the entire supply chain of companies. This innovation model covers the complete life cycle of products and services, from their conception, design and manufacture, to provision, use and withdrawal/recycling.

FIGURE 1
INNOVATION MODEL DEVELOPED BY CVIDA



Source: CVIDA brochure http://www.cvida.com

A key feature of CVIDA cluster is the fact that this innovation model is considered a strategic tool for transforming quality-of-life into a competitive advantage for manufactures and suppliers of people-oriented products and services. In this model was included the final consumer along with other stakeholders: companies, professionals, research and technological centers and governmental agencies. The analysis of the model shows that it is a challenging concept and brings a modern approach of the inter-firm cooperation process. The use of this concept inside the cluster is a differentiating feature, which creates benefits for the group such as:

- It creates a synergy of ideas and activities of all members
- It builds a strong added value chain for each member
- Enhances the commitment of each member to supply chain and to identifying partners for innovation process
- It creates a strong notoriety of products and services created in the cluster in final consumer's mind and in the community or society.

Malopolska Cluster

Starting with 2008, the main objective of Malopolska region was to assure an economic development based on boosting research and developing industrial enterprises activity (PARP report, 2011). Thus, one of the strongest assets of the region became an extensive research infrastructure, which created very good conditions for the development of cooperation between enterprises with research units.

Within this context Life Science Cluster started in 2006 with 32 members from science area: universities, technology transfer centers and business – hospitals, companies from biotechnology, pharmacy, medicine and consultancy or business support units. It was formed as a common project managed and administrated by one of its founding members, Jagiellonian Centre of Innovation, in order to maintain its ongoing activities and secure quality services. Nowadays, the cluster brings together over 70 companies, and the core competences created in the process of cluster development are: supportive entrepreneurship and innovation in the field of life science, effective combination of people, businesses and local authorities, good infrastructure for successful commercialization of research and development of project results.

An essential factor for development of this cluster was cluster's founder idea to develop a high level infrastructure, which then resulted in Life Science Technology Park. A space of 3000 sq.m., with laboratories and offices, facilitated the incubator and spin-off activities and attracted investors for life science industry. The incubator activity of the park created and still creates many advantages for the cluster:

- provides guidance and support to individuals with projects to create innovative firms
- generates a potential increase of cooperation in the product innovation process
- offers financing solutions for projects in the initial state of development
- maintains close relationship with large companies and research laboratories interested in cooperating with members and investing in these projects
- attracts in the cluster a large number of business support institutions, such as seed capital fund, investing funds for high risk projects.

The internationalization of cluster's economic activity is becoming a popular way of building competitive advantage. Following this trend, Life Science cluster signed various agreements and joined international platforms. Establishing cooperation platform in a form of commercial company (not e.g. association), can be perceived as a novel approach and create opportunities for closer connections with business and market needs.

The cluster cases analyzed lead to the conclusion that, in order to develop networking and clustering activity in life science industry, it is important to foster the following successful factors:

- Increase of the overall resources, public and private, dedicated to research, development and innovation
- Promotion of the vertical integration, co-ordination and interaction between all agents of the cluster/network
- Promotion of the implication of private sector
- attraction of large companies in innovation activities as a key factors for the company's strategic development
- Development of a scientific and technological culture in the region and increase of community awareness on science and innovation

DEVELOPMENT OF SMEGoNET NETWORK

SMEGoNET project started as a follow up of the Cluj County environmental factors and economic conditions analysis for 2 years (May 2011-April 2013). SMEGoNET is a sub-project funded by the mini-program SMART+, which, at its turn, is funded by the INTERREG IVC and the European Regional Development Fund (ERDF). The objective was to create a life science companies network within the Cluj County area. The main factor that added value to this project was a partnership with 3 other geographical areas from Greece, Poland and Spain, which ensured the experience exchange, information and knowledge transfer, and ability to collaborate in achieving the project objectives. The potential of the life science field provided by the Cluj County was the starting point for the formation of this network. Additionally, the cluster model of Polish partner was taken into account.

The creation of the network was governed by several principles, which can be seen as useful guidelines for the formation of other networks. The first one was that existing forms of cooperation among firms is a prerequisite for clusters initiatives and also for promoting a sense of trust among network members. Based on this, throughout the whole process of creating the network, we constantly considered the objective of identifying local initiatives of cooperation among companies, in order to use them for strengthening the network and for providing utility to its members.

The second one was that innovation must be present. Consequently, from the first stage of identifying and attracting network members, we established the following criteria for network development: openness to innovation and cooperation in this respect, innovation capacity of the firm and the degree of innovation applied to the present.

The third principle was that due to the current intensification of globalization and competition, ideas and concepts of innovation and implementation of new technologies become more and more a results external to business. Thus, companies are increasingly focused on available key competencies and try to implement new knowledge generated by other actors in their industry. A tendency of specialization of the companies in certain activities and a high potential of vertical integration application within a network or industrial cluster are more and more visible. In order to obtain the knowledge, know-how firms increasingly rely on collaboration relationships within the network, which currently represents the most important channel for experience transmission and exchange.

The fourth principle comprised the fact that small companies depend on a much higher degree on external sources of information regarding the development of innovation capacity than the bigger ones. Therefore, they are much more interested in forming links with these sources of knowledge, information and innovative technologies, even through networks. They are, also, willing to participate in innovative networks organized on regional, national or international level. The results of empirical research have confirmed that companies that develop collaborative relationships or are involved in networks are more innovative compared to those who do not show this interest (OECD, 2001, 2004). Based on the above mentioned idea, the network formed within SMEGoNET project focused on the small and medium

enterprises in the life science field and this lead to the creation of another project objective: to identify and promote the most innovative ideas and best practices in the life science field.

The SMEGoNET network can serve as an example for future similar initiatives that share similar conditions. Some of its most important characteristics and activities that contributed to its success are mention hereinafter. The network has 28 active companies and research institutes from the following sectors: pharmacy, biotechnology, cosmetology, medicine and research – technology transfer. The connection with local authorities was maintained through meetings organized within the project. The main activities planned for the formation of the network were seminars on innovation, open innovation and Blue Ocean Strategy, on their advantages, on the ways of creating competences as a network member. As a part on network formation process, we planned and implemented an online training program, "Collaborative Innovation Competences", in order to help members gain abilities necessary for network cooperation.

In the development of this instrument, we applied the concept of open innovation and, thus, we obtained an extremely affordable training program for all members of the international network; we used ted.ed platform (structured on four themes: basis of innovation, open innovation, blue ocean strategy and networking and clustering activity), a simple and clear format, and we integrated suggestive media elements, like short video presentations and documentation. These virtual classes provided added value by showing ideas and opinions on innovation activity in the network of other companies from other fields and, thus, enlarged the experience shared by network members. This program was complemented by the experience gained from the study visits organized to promote international collaboration among network members of the 4 regions involved in the SMEGoNET project. On these occasions, we identified benchmark companies for innovation activity. They were presented at the inter-regional meetings in order to promote their activity and their cooperation interests on various fields. We also organized a competition designed to identify the best innovation idea or practice. During the competition, companies were stimulated to perceive the innovation process in collaboration with a partner (not necessarily a network member). The contest served both as a training and open innovation concept promotion tool and as a driver of possible new collaborative projects.

CONCLUSION

The formation of SMEGoNET in Cluj, as a top-down network, benefited from several important factors that insured its success: presence of a strong academic environment in life science field, experience exchange with other two clusters in the life science, interaction with groups of companies from other three European countries, skilled workforce in life science, market opportunities for results of collaboration, positive attitude of the companies towards innovation and collaboration.

The SMEGoNET network can generate a cluster focused more on biotechnology, pharmacy and medical technology areas. Key competences, available both on academic and on business level, are related to oncology, nanotechnology, plant biology, agro-food, drug delivery and immunology. The relationship with big companies or research institutes to boost collaborative work within the network through joint projects is a strength that can be developed. Without these big companies is improbable to create a favorable environment for the development of new products, techniques, technologies, and a strong entrepreneurial culture.

The network must be developed on a larger geographical area because so far the focus on Cluj County limited the cooperation potential in many fields. Two years of project experience in creating the network and interacting with its members revealed that the most active entities towards innovation and the most open ones to collaboration in order to apply innovation are manufacturing companies. The fact that these small companies are in growth stage of their development explains their attraction towards clusters and networks, but, at the same time, brings in the issue of risk-taking in starting projects with private financing. An important aspect to be considered in the future development of the network is to give it a legal status and to identify funding sources, both public (local funds to support innovation, national and European funds) and private.

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