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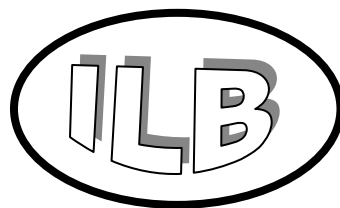
System Dynamics and Innovation in Food Networks 2012

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Cluster Initiatives in Poland as a Factor of Economic Development

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Abstract

The cooperation of regional actors from science and business practices within a cluster affects both the competitiveness and innovativeness of companies and regions. The economic benefits achieved by companies participating in a cluster are varied and depend on the individual's experience, human and intellectual capital, organizational efficiency, etc. However, clusters are an important mechanism for stimulating innovation, and therefore in the knowledge-based economy, it is important to form such structures.

As part of this publication, assumptions regarding a creation and development of a regional cluster and its positive impact on the economy, both local and regional, which indirectly contribute to economic growth, will be presented.

Keywords: *Cluster initiatives; competitiveness; innovativeness of companies and regions; the Mazovia region, Agribusiness.*

1 Introduction

The accession to the European Union created new opportunities for improving development of Polish regions. One of the major beneficiaries of integration with the European Union represents the food sector. Nevertheless, Agribusiness enterprises in Poland face many challenges, as they want to remain competitive in local, national and international markets. The regional competitiveness plays a prominent role in the enlarged European Union and within the framework of globalized markets that is characterized by enhancing competitiveness and growth.

The long-term prosperity of enterprises is determined by its innovation which is recognized as a vital instrument of competition in the global market. One of the factors that may play a role in the process of economic development of enterprises in the Agribusiness sector is creating regional clusters. According to Michael Porter: "clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers and associated institutions in a particular field that are present in a nation or a region" [Porter 2000]. These associated institutions may be e.g.: research institutes, universities, financial bodies and public sector agencies.

One can say that clusters give opportunities for coordination and mutual improvement. Recently the regional cluster approach became recognized as a valuable tool to faster economic development, because they are regarded as an efficient way to achieve job creation and wealth in regions [Porter 1998]. As a result, a well-functioning cluster should contribute to accelerate employment growth, profit of companies and ultimately to faster economic growth. Hence a cluster brings benefits not only to its direct participants, but also influences positively regional development. According to analysis of the Institute for Market, Consumption and Economics Research cooperation of firms creates favorable conditions for progress, and it gives the possibility for accelerating development of these companies and achieving greater competitiveness in the market. Numerous examples, in both industrialized and developing countries, demonstrate that SMEs clusters have established themselves as

important and dynamic players on the international market responding to global competition challenges [Unido 2001, p 10].

Challenges coming from the market are a determination for Agribusiness to meet the requirements of competitiveness, to implement organizational innovative solutions and technology. As a result, so called knowledge triangle of research, education and innovation will be created. A cooperative mechanism can facilitate sustainable development and competitiveness of the Agribusiness sector.

2 Current stage – the Mazovia region

According to Report of University of Szczecin, in which economic and social environment factors like geo-environmental factors, traditions of the region, infrastructure, education and access to educated workers were researched [Report 2008] one can say that the Mazovia region is not a strong region in Poland. In addition, some barriers of regional development in the Mazovia region were identified.

A Low Enterprises Expenditures on New Technologies and R&D

It was confirmed in many studies that there is a relationship between the R&D expenditures in business sector and economic growth [Witkowski 2007, p 59]. Hence, one can conclude that the main reason for a low level of innovativeness and innovative capacities of the Polish economy is a low and decreasing level of R&D financing during the last decade [Gorzynski et al. 2006]. According to GUS, the level of R&D spending in Poland in 1998 amounted to 0,28% of GDP, in 2005 it was 0,57% of GDP [GUS 2002]. At the same period the total expenditures on R&D activity in OECD countries amounted to 2,26% of GDP and in the EU to 1,81% of GDP [Gorzynski 2007, p 316]. Nevertheless, other studies show that the influence of R&D expenditures and economic growth is not as obvious as it might seem [Witkowski 2007, p 59]. Some authors conclude that the policy-maker should concentrate more on creation of pro-innovative working environment and cluster culture based on trust and exchange of knowledge and innovation, rather than on an increase of R&D expenditures only [Dyker 2007; Kaderabkova and Cicha 2007].

B Low Innovative Potential of SMEs in the Region

PARP's studies indicate that the SME sector in Poland has a small innovation potential, and even smaller research potential. In the case of the Mazovia region, companies in the SMEs sector contributed approximately 22% to innovative development in the region, while small companies had only about 5% of expenditures. This indicates the importance of small businesses in the SMEs sector in the Mazovia region while shaping research and innovation potential of the region.

C High Costs of Innovation Implementation

According to GUS, the main barrier for innovation activities of firms located in the Mazovia region is too high cost of business innovation and for the whole country the barrier constitutes lack of financial resources [GUS 2002].

D Low Participation of SMEs from the Mazovia Region in Use of New Technologies

The results of research conducting by different scientific institutions show that the innovation created in national research centers are used only slightly as a source of innovative activity by enterprises of the Mazovia region. There is no demand from the

market on such innovation. Also other authors write that level of innovativeness of Polish economy is unsatisfactory [Gorzynski 2007, p. 315]. According to the PARP, this applies in particular to small firms that have limited access to information and benefit from modern technology to small extent. Studies conducted by Burawski and Lewczuk indicate that the most frequently introduced innovations include: high-tech manufacturing (17.1% of firms), purchasing of new machinery and equipment (14.6% of firms) and automation of work (13.3% of firms) [Burawski i Lewczuk 2008]. According to PMR, SMEs spend in 2005 on IT only one eighth of the value of the IT market in Poland, while in Western European countries the share is at least twice as high.

To increase the innovative capacities of Polish economy, the main strategic goal of the Polish innovative policy should be a significant increase in R&D expenditures and stimulation of innovative activities by the private sector [Gorzynski 2007, p 316].

E Ongoing Restructuring of Agribusiness Sector

In the Polish food processing industry changes associated with marketization and privatization, also with the participation of foreign capital, have taken place. The processes of restructuring and consolidation of enterprises run at different speeds depending on the industry. Although the significant changes have been already made, the Polish Agribusiness sector is facing next challenges. The implementation of innovations is an inherent factor of adaptation to changing conditions. The speed and scope of their implementation determine the competitive advantage of companies in the market. The implementation is today no longer a choice but a necessity.

F Stopping Implementation of Innovations by Managers of Agribusiness Enterprises

Bielski said that there is no simple relationship between innovative activity and expenditure on innovation and proved that sometimes a growth of inputs causes only increase of a single innovation cost, and does not affect their number. The author noted that one of factors that strongly and positively influences innovation is participation in a international transfer of knowledge. The running a modern business requires from its owner having the knowledge and skills in use of various sources of information on innovations. The research shows that only every second company of Agribusiness (51.2%) have improved qualification of staff, mainly through participation in training courses, exhibitions, seminars and conferences.

G Institutional Barriers

Lechwar writes that competitiveness can be achieved only by an effectively functioning institutional mechanism at not only national and regional but also at a local level [Lechwar 2009]. Zuzek indicates that institutional barrier restricts building of process innovation [Zuzek 2004].

2 Goal of the cluster building

The main goal of the initiative is to create particularly favorable conditions for Agribusiness development in the Mazovia region by providing knowledge, encouraging innovation, stimulating cooperation between companies and institutions and pursuing common objectives of the Cluster-participants. The specified goal corresponds to assumptions of Priority of Regional Operational Programme (ROP) 2007-2013, which is "to improve the competitiveness of the Mazovia region by creating favorable conditions for development of innovation potential and support of entrepreneurial development."

The above stated objectives contribute to the achievement of the Action 1.6 of the Regional Operational Programme, which says about “the development of business networks by supporting the creation and development of clusters and cooperative relations between enterprises and R&D.” Within the Agribusiness Cluster cooperative relationships of 7 enterprises and one university will be supported, which is a measurable output indicator of fulfilling the goal of Action 1.6 of ROP.

Initiation of cooperation within the Cluster aims to build an efficient tool for development policy, to raise the level of innovation and competitiveness of the Mazovian enterprises over their European competitors. The created solution will fill existing gap by combining complementary institutions in the Agribusiness sector. Reducing of this gap will be beneficial for all participants of the Cluster, it will allow generating synergies. Not only the size and structure of owned resources but skills of their efficient use and development determine the competitiveness of the market and this will be supported by the Cluster-initiative.

A factor fully justify that the Cluster building is of the importance for strengthening the Agribusiness sector and its links with R&D, contributing to an easier transfer of knowledge, exchange of experience and reducing of operating costs. Within the ongoing processes in the Cluster, the company-specific knowledge that is a basis of achieving of competitive advantage based on unique competencies, particularly in the area of innovation, will be generated. Companies which want to operate in a competitive environment must participate in the creation of knowledge. Relationships of the three dimensions: science, technology and economy will be created within the framework of the initiative. Within the Cluster, following groups of companies will be included: Agribusiness / food industry companies representing all parts of supply chain (buyer and traders of raw materials for manufacturing, food processing, wholesale and retail trade), technical services, information technology, consulting services and financial services.

3 Description of the Cluster-initiative

A creation of corporate relations functioning within the Agribusiness on a regional level is the goal of the initiative. Within the Cluster activities of university which stands for scientific background (SGGW), business environment institutions (2 business organizations) and enterprises (7 companies) will be unified. Agribusiness enterprises cooperating in the Cluster are located in the Mazovia region.

As a result of the Cluster building, an Internet platform for Innovation in the Agribusiness providing information, enabling networking and implementation of joint innovative initiatives will be created. As part of the platform, 5 new, innovative services will be supported via the Internet. Enterprises grouped in the Cluster will receive free use of them. Services will be provided within two modules:

1. Food Safety:

- Supply Chain Management (Traceability, Workflow Management) – Online platform for Supply Chain Management.
- Online Consulting in quality management (Quality Management, Food Safety, Hygiene, Food law, International law transport / Logistics / Packaging / Labeling law).

2. Food Professional:

- E-learning (defined training) – online training service. With the purchased technology (e-learning platform) a set of training in Supply Chain Management, Quality

Management, Food Safety, Hygiene, Food law, International law transport / Logistics / Packaging / Labeling food, etc. will be running.

- Meetings of originators and investors (exchange of ideas) – a service allowing an exchange of information and attracting investors to projects carried out jointly. The platform members of the Cluster and providers of finance support will be able to share information of their projects or ideas and seek funding for them.
- Working groups (project groups, taking actions within a specific project) – a service that allows members of the Cluster to organize a common work. Creative teams will jointly implement online projects.

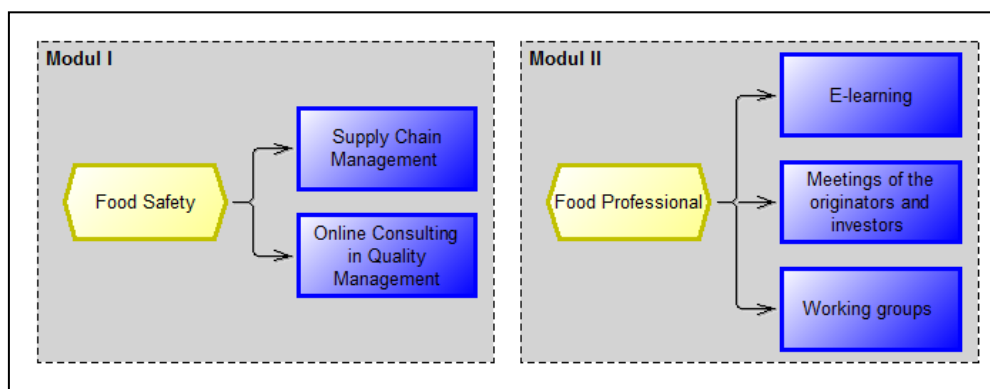


Figure 1. Two modules within the Cluster

Source: Own work.

All modules of the platform will be integrated into a single portal. The solution is based on the latest technologies in the field of software development. The architecture of IT solutions developed within the Cluster will have character of process innovation. Services will be provided as the S2B (Science to Business) solutions within the Cluster.

Currently such services are neither offered by any cooperative agreement of a similar nature in the region, nor in Poland. Moreover, the commercial offer available on the market is quite limited. There is no offer of comparable scale and scope. Hence, the created set of services should be considered as a product innovation at a regional and even national level.

The Cluster-initiative will contribute to fulfilling objectives of the Regional Operational Programme of the Mazovia Region by achieving result indicators, which will be 5 new technologies and 5 new services. Besides the main objective, the following specific objectives will be fulfilled:

Objective 1: Facilitating access to “new knowledge” and stimulating of innovation (knowledge transfer).

Objective 2: Ensuring of availability of well-skilled human resources.

Objective 3: Development of cooperation between participants of the Cluster and supporting of enterprises development.

Objective 4: Promotion of the Cluster as an attractive and innovative center of Agribusiness.

Specific objectives of the Cluster-initiative are:

1) In the exchange of information, facilitating access to “new knowledge” and stimulation of innovation:

- Initiating and implementing of R&D projects which base on partnerships of the Cluster-participants.
- The analysis of financing possibilities for R&D projects.
- Participation in programs and international cooperation in the range of research, development and innovation.
- Defining and development of technology connected to the Cluster-initiative.
- Initiating of research development for the industry.
- Elaboration of principles for transfer and commercialization of R&D projects.
- Promotion of innovative culture in the business environment and business culture in the scientific community.
- Organization of information meetings on research involving companies and leading research units.
- Identifying industry development trends in the world (e.g. purchasing of analysis and reports).

2) In the ensuring of availability of well-skilled human resources:

- Analysis of training needs in companies and the qualifications of work candidates.
- Development (in cooperation with companies) of guidelines for changes and extension of study programs in the field of the Agribusiness.
- Initiation and implementation of joint training projects in specialized areas of Business / Agribusiness in the form of seminars, courses, postgraduate studies (in particular subsidized).
- Establishment of cooperation with prestigious training and certification institutions.
- Inclusion in study programs at universities additional skills: technological (project management, quality assurance and process engineering) and “soft” (knowledge of languages, presentation skills, teamwork skills and marketing skills).
- Creation and coordination of programs for acquiring professional experience by students – internships, trainings and projects group (regionally, nationally and abroad).
- Creation of a program encouraging students (primary and secondary schools) to choose the science and careers path in the Agribusiness.
- Promotion of the industry as an attractive employer – information meetings, study visits in the best companies, etc.
- Development and promotion of best practices implementation for acquiring and maintaining best staff in the area of technology and business.

3) In the development of cooperation between the Cluster-participants and the support of enterprises development:

- Initiation, organization, financing and support of the Cluster-participants in the implementation of joint (especially interdisciplinary) projects.
- Analysis of available funding opportunities for projects accomplishment within the Cluster and by the Cluster-participants.
- Initiation of projects aimed at infrastructure development, particularly in the field of testing and development of products.
- Organization of cooperative meetings.

- Creation of working groups focused on the activities of the highest value-added in areas of the Cluster-participants interest.
- Services for the Cluster-participants, such as assistance in applying for European funds, consulting, marketing, export etc.
- Participation in regional and national programs for stimulation and support of development of new Agribusiness enterprises.
- Development and implementation of sustainable model of the Cluster-initiative, including legal form, organization, financing, communication methods, etc.
- Support of development of “investment readiness” in companies in order to attract investment capital.
- Development of the Cluster-specific financing mechanisms of most interesting projects (larger companies in the Cluster as investors for the smaller enterprises).
- Assessing projects of the Cluster-participants for compliance with the Cluster Strategy.

4) In the promotion of the Cluster as an attractive and innovative center of the Agribusiness:

- Development of the Cluster promotion strategies.
- Ensuring effective communication within the Cluster between the companies and institutions from the region: universities, technology parks, regional and local authorities, business support institutions, etc.
- Lobbying for infrastructure development, investment facilitation and service improving from the side of public administration.
- Creation of products, services and databases in order to promote the Agribusiness Cluster in Poland and abroad.
- Promotion of projects, good practices and achievements of the Cluster, companies through e.g. case studies, references, etc.
- Establishment of cooperation with other clusters of Agribusiness in the country and abroad – study visits.
- Participation in supra-regional and international projects such as the INTERREG.
- Attracting new members of the Cluster.
- Positioning the Agribusiness Cluster as an influential consultation center for regional and national policies in the areas of industry interest.
- Creation and development of modern and functional website and newsletters.

Promotional activities conducted on the Cluster platform will lead to increase of knowledge of the Cluster in the business environment.

4 Innovation of the Cluster

Enterprises of Agribusiness are determined by challenges coming from the market to implement organizational and technological innovative solutions. It is about creating so called triangle of knowledge which consists of research, education and innovation. In the Cluster initiative we are dealing with product innovations. Within the Cluster, a new set of services will be introduced for the Agribusiness. Improvements will include a technical side (latest technology), components (multiplicity of functions) and friendly user service (intuitive interface). Product innovation results from the activities and large knowledge in effective solutions supporting Agribusiness. Innovation of the Cluster based on an innovative solution of services providing, both in a technical, technological and utilitarian dimensions. The way the provider and the recipients as well as recipients with each other communicate within the

Cluster will gain a character of process innovation. For the Cluster-partners and services recipients it will be a process innovation because new methods of communication management will be introduced. The introduced innovation will improve the communication system of the service providers and customers and the communication of customers with each other (within working groups). The way of service providing within the Cluster will gain S2B character. This is confirmed by the nature of IT infrastructure aimed at providing online services for the Agribusiness.

An online service platform will be created within the Cluster. Many new technologies (modules for projects) will be implemented on the platform. Services will be created using modern components of software development. Server application solutions will include creation of online software and components allowing advanced communications and searching for information by using such tools as forum, blog, massager, searching machine and meta-search (query). The technologies allow creating web applications, which in its functionality did not differ from traditional applications installed directly on computer or server. The proposed technological solutions guarantee the independence of hardware equipment (hardware) and the browser websites.

Five innovative services based on five new technologies provided within the Cluster will increase innovation potential in companies of Agribusiness. Companies that are active within the Cluster will use the services that will be applied to enrich their product range and their way of providing services to its customers. This will contribute to the diffusion of innovation in a large group of companies in the region. With the implementation of the project, companies in the Cluster will have access to innovative services for free, without having to bear any costs.

5 Influence on the local economy

The cooperation within clusters of regional actors from science and business practices affects both the competitiveness and innovativeness of companies and region. Studies of Cyrek and Cyrek indicate a significant impact of innovations on the competitiveness of food industry [Cyrek and Cyrek 2009]. The economic benefits achieved by companies participating in clusters are varied and depend on the individual's experience, human and intellectual capital, organizational efficiency, etc. However, clusters are an important mechanism for stimulating innovation, and therefore in the time of knowledge-based economy there is a need for building such structures. It is planned to create and develop a cluster of regional character, which will have a positive impact on the both local and regional economy as well as indirectly contribute to economic growth in the region and improve its economic and financial condition.

A well-functioning cluster should contribute to accelerate growth of employment, profit of companies, and ultimately to faster economic growth. The Agribusiness Cluster brings benefits not only to its direct participants, but also influences positively regional development.

Although, at current stage of initiative, it is not possible to quantify the project's impact on economic growth, for sure it will help in the region to:

- stimulate local economy,
- specialize market of production factors,
- increase the productivity of enterprises,
- lower transaction costs,
- accelerate the process of creating new enterprises,

- increase interest of investors – business development, job creation,
- develop so called service sector of Agribusiness,
- increase innovation and competitiveness of the region,
- create greater possibilities for interactions between firms in the field of cooperation in the development of new technologies, products, investments or lobbying – greater innovation,
- create greater potential for innovative people working in enterprises gathered in the Cluster,
- improve of the Mazovia region image,
- increase the attractiveness of the region for business travelers,
- develop the scientific base.

6 Conclusions

The long-term prosperity of enterprises is determined by its innovation which is recognized as a vital instrument of competition in the global market. One of the factors that may play a role in the process of economic development of enterprises in the Agribusiness sector is creating regional clusters.

As a result of the Cluster building new, innovative services for the Agribusiness and food industry will be made available:

- Supply Chain Management (Traceability, Workflow Management) – online platform for Supply Chain Management,
- Online consulting in quality management,
- E-learning (defined training),
- Meetings of the originators and investors (exchange ideas) – a service that allows the exchange of information and attracts investors to projects,
- Working groups (project groups, taking actions within a specific project) – service that allows organization of work for the Cluster-members.
- The functioning of the platform will contribute to establishing new business contacts and expanding opportunities for cooperation of individual members of the Cluster. Joint implementation of tasks within the Cluster will contribute to strengthening cooperation as well as enhancing innovation and competitiveness of the whole cooperative relation and its individual members.

The functioning of the Cluster structures in the region might have a positive impact on the both local and regional economy and indirectly contribute to economic growth in the region as well as improve its economic and financial condition.

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