

# CONSIDERATIONS REGARDING THE FACTORS THAT INFLUENCE THE PERFORMANCE OF CLUSTER

DANA-CODRUȚA DUDĂ-DĂIANU, DANIELA HARANGUȘ  
UNIVERSITY TIBISCUS OF TIMISOARA, 1/A DALIEI STREET,  
cddaianu@yahoo.com, danaharanguș@yahoo.com

## **Abstract:**

*Economic performance is an objective of each cluster and innovation is a result of future performance indicator. The working paper proposed to measure the cluster performance based on three success factors: competitiveness cluster, cluster growth and the degree of the objectives. Based on Porter's diamond model will be a breakdown of the main factors influencing the development of clusters and their delineation in general and specific factors cluster. In the same time, will analyze the main directions that define performance clusters: access to resources, access to specialized knowledge, entrepreneurship based on the opportunities, collaboration between organizations and cluster specific organizational culture.*

**Key words:** cluster, competitiveness, cluster's performance, economic development

**JEL classification:** O25, O30

## **1. Aspects regarding the general factors that contribute to the performance of cluster**

Economic performance is an objective of each cluster and innovation is a result of future performance indicator. A parallelism between economic performance indicators in the general context of the economy and the corresponding results shown in Table innovation

Cluster performance measures can be based on three success factors: competitiveness cluster, cluster growth and the degree of the objectives.

In the clusters tend to indicate a shift in economic performance overall approach to results-based approach. A higher level of assessment of our results highlight the innovative outcome which is defined by the number of patents, the growth rate of start-ups, through venture capital investment value, the number of new companies listed on exchanges or through cluster number of companies that have the force to occupy a relevant position globally.

Dynamic cluster environments are characterized by a number of factors underlying their creation and development:

- intense local rivalry based on prestige, which stimulate change and ensure continuous improvement of the resource base;
- dynamic competition following the entry of new companies in the cluster, including spin-off;
- intensive cooperation between different institutions;
- access to more specialized inputs (human resources, financial capital, infrastructure) and collaboration with research institutes and universities;
- proximity to specialized customers.

Economic performance is an objective of each cluster and innovation is a result of future performance indicator. A parallelism between economic performance indicators in the general context of the economy and the corresponding results shown in Table innovation

The main directions we propose that defining the performance clusters are: access to resources, access to specialized knowledge, entrepreneurship based on the opportunities, collaboration between organizations and cluster specific organizational culture.

## **2. Aspects of institutional specific factors that contribute to cluster's performance**

The main institutional factors that contribute to performance cluster are: government, universities and specialized research centers, institutes and business collaboration.

*Government* affects competitiveness by influencing business. Government at all levels influence positively or negatively the business environment and productivity cluster.

*Government* has five distinct roles in the competitive context:

- establishes a macroeconomic environment, stable political and legal,
- improve quality and efficiency of infrastructure (eg roads and utilities) and institutions (eg schools, universities),
- establish rules and incentives governing competition, for example, intellectual property protection,
- facilitate the development and improvement of the cluster
- Established and participate in regional prioritization process.

Most governments made the first three roles. Few governments actually play the roles of four five. [Porter M. 2005]. Thus, the role of government is to improve the business environment and not intervene in the competitive process.

*Government* support to be found in the following areas:

- A) Investment in science and technology
  - financial support for research in universities and other research centers,
  - establish policies and rules that encourage investment in university science and technology infrastructure,
  - financial support for specialized training programs in science and reorganization
  - uniform distribution of universities in all areas.
- B) Improve the innovation policy context
  - pursue enforcement of intellectual property
  - monitoring the application of antitrust laws and removing barriers to innovation,
  - tax relief for investments in R & D investment and academic collaboration.
- C) Allocations for development of clusters
  - cluster development funding through competitive grants,
  - cluster support for institutions that communicate and collaborate with local businesses
  - supporting regional economic development strategies based on innovation
- D) Provide data for measuring regional economic performance
  - specific data collection by improving information, collection of measures to encourage economic and innovation performance

*Universities and specialized research centers* are forces that must guide the innovation process. They are characterized by the following elements:

- Participate effectively in efforts to develop cluster
- Create and support technology transfer offices,
- Collaborates with enterprises and capital companies to improve technology transfer process,
- Analyze the process versus intellectual rights marketing, created by the university and promote effective methods of disseminating knowledge.

- Adapt curricula and research the requirements of local clusters.
- Create specific institute clusters to support collaboration between the academic and industrial clusters,
- Collaborates with local industry to establish areas of excellence within universities that can be distinguished universities through the complementary strengths of local industry,
- Integrates research and training efforts with local industry requirements,
- Participate in the recruitment of businesses.
- Supports efforts to start-up of teachers and students in entrepreneurship, finance and consulting.

*Institutes for collaboration* are formal or informal organizations and networks which are characterized by the following elements:

- A) Facilitate the exchange of information and technology
- B) Promote different types of coordination and collaboration that can improve the business environment in the economy or in the cluster.
- C) Perform diagnostic tests on the competitive position of the cluster:
  - Compare position relative to other regional clusters,
  - Identify limitations, obstacles and benefits.
- D) Develop training programs and management
  - Provide programs through institutions of cooperation,
  - Provides programs through collaboration with local institutions.
- E) Participate actively with government in recruitment efforts
  - Communicate with enterprises from the cluster to cluster and identify gaps in recruiting staff to cover gaps.

Cluster specific collaborative institutions include trade associations, incubators university advisory boards, alumni networks of schools and companies.

Institutions for collaboration in clusters create relationships and contribute to increased trust between organizations in the cluster.

Cluster specific collaborative institutions can contribute significantly to increase the success rate of start-up companies.

An important place, even central, to economic clusters is played by enterprises. Enterprises in the cluster are characterized by the following roles:

- Recognize the importance of location to obtain competitive advantage
- Play an active role to improve the competitive environment,
- Communicate requirements consistent local universities, research institutes and training centers.
- Contribute actively to cluster development activities.
- Participate actively in cluster activities to identify new opportunities for collaboration
- Contribute to programs that support new enterprises (eg, improving access to venture capital and specialized services).

### **3. Aspects regarding technological transfer process inside the cluster**

Technology transfer process involves primarily a technology that is a complex set of resources, knowledge and know-how, organized the production of and / or services.

Technology becomes a "product" that is an object of a business when they are involved: innovative companies, consultants in the field of IP, business consultants, financial institutions, brokers in technology.

As with any product and ITC products makes sense to speak of a market or about marketing technology.

Technology transfer from the creator (research-development activity) requires a business-specific activities that lead to business innovation and growth potential of the enterprise.

Implementing a new technology requires the acquisition of all its components (resources, knowledge, know-how), and access can be provided by any of the following methods: catalog-based buying, purchasing specification based on the purchase of modernized equipment, sub-contracting, hiring professionals, education and training of staff, copying (reverse engineering), technological transfer itself (purchasing the license), entrepreneurial networks, clusters, strategic alliances, joint ventures (joint ventures), cooperation with universities, research institutes, perform their own research-development, research-development contracting.

Technology transfer can be defined as transmission of knowledge used to produce goods and provide services that ensures companies get them to improve their respective products or services to be more competitive in the market.

Inside the cluster, the process can be essentially considered a connection and technological cooperation between existing enterprises in the cluster to provide or acquire knowledge. This may be a transfer of intellectual capital and know-how between organizations in developing and marketing products and services of clusters enterprises.

The eight factors to be considered for technology transfer within a cluster are: impact, market pressure, and attitude, dependence on other partners, adaptability, maturity, distance and formalism of the transfer process. They can be grouped into two main groups:

A) Factors related technology to be adopted and how they are related to what unused;

B) Factors that are related to how the implementation of planned and personnel involved (human factor).

Due to these factors, mechanisms of technology transfer must take into account the following elements:

- Capital equipment, technologies and devices including those involved in producing the goods. It involves the sale and purchase of capital goods;
- Human capital. Exploration technology is a process that identifies emerging technologies and determines strategies for research and development sector. Strategic management activities will naturally lead to significant economic and social benefits;
- Technological intangible capital, including contracting rights to use knowledge of a patent through licensing for royalties (as a percentage of sales or annual fixed amounts).

#### **4. Conclusions**

Clusters offer several advantages that look from the perspective of organizations intending to join in such an organizational structure.

Economic benefits it generates clusters, serve as cluster members and the public interest as efficiency, innovation and the training achieve higher rates. Thus, clusters are seen as a way to success in today's world dominated by change.

Key benefits of clustered organization are: innovation, market access, infrastructure, human resources, financial resources, proximity, reducing transaction costs, improving the image.

- *Innovation*

As a result of intensifying competition in clusters firms must innovate, to constantly seek new products and better production methods. In general, clusters have the ability to innovate. [Frisillo, 2007; Vanhaverbeke, 2001]. Local concentration allows more rapid diffusion of innovations than in the other areas "not integrated".

In the era of "Ford" innovation occur in large companies and the process is run in a linear fashion, with a sequence of stages of research and development to production and marketing.

The innovation clusters became very important in the post-"Ford" characterized by emphasis on incremental innovations that arose as an interactive learning process, involving companies in the cluster. This can be achieved through cooperation between local companies and other institutions based on direct communication "face to face".

- *Increased competitiveness*

Training initiatives are clusters of concentrated efforts to increase competitiveness clusters in a region, involving companies, local authorities and training organizations and research.

- *Increased productivity*

Clusters allow businesses increase productivity because the cluster has access to suppliers of labor and specialized information.

Second cluster can promote innovation by increasing the skills of people to identify opportunities for new products or new processes.

It also facilitates marketing innovation clusters by creating spin off new businesses and new business lines of existing businesses. Establishing a new business in a cluster is easier than elsewhere, because all the necessary success factors are clustered.

- *Market Access*

Clusters are crucial for market access. Small businesses can enter the domestic market, but only in very few cases can be competitive in distant markets, if not part of a local network of complementary skills.

Export group can allow enterprises to overcome their individual limitations and to penetrate foreign markets. Cooperation among group members gave a better identification of export market is much stronger than if they acted individually.

- *Improving communication and exchange of strategic*

Improving communication between organizations in the cluster due to proximity and the confidence to other companies is an important advantage offered by such organizations.

Exchange of strategic advantage of the cluster is significantly contributing to the foundation of good business decisions.

Businesses require detailed information to improve the quality of competitive and flexible management strategies to the new requirements of international market.

- *Human Resources*

By concentrating more business in the same field in a region forms an important basis for specialists.

In the cluster can be found a source of skilled labor with high mobility, transaction costs for identification, selection and employment are relatively low because companies can easily find specialized human resources in the cluster. .

The report "Innovations Clusters in Europe" (2009) conducted at European level Committees, approximately 38% of EU employees working in enterprises belonging to clusters.

- *Proximity to customers and suppliers*

The cluster most companies use the same "input" with the same suppliers of different specialized services.

Entries are available locally in a wide variety and low cost due to reduced transaction costs associated to bring them within the cluster.

A cluster has greater bargaining power with suppliers than an individual organization. If suppliers are local decreases the need to store a significant amount of "inputs" reducing the cost of fixed capital for their storage. [Porter, 1996]. In addition, suppliers of proximity are the best place for information exchange and for cluster development. Proximity allows exchange of information with customers in relation to new needs and technologies.

- *Reduce transaction costs*

Improving communication is a decrease in costs associated with the contracts and choice of business partners.

- *Financial resources and allocation of common resources*

Clusters facilitate specialization and effectively help entrepreneurs to invest "small steps", according to the resources and skills available. Thus, in some associations formed in the cluster can develop close relationships with financial institutions.

- *Joint allocation of resources*

Cluster shows that organizations are in competition can work, if they find a way to mutually beneficial cooperation, based on the principle of win-win.

Clusters are seen as a way to success in today's world dominated by change and that through an economic crisis. For the national economy, clusters have the potential to create value added than an isolated firm. Clusters are the solution for many SMEs to technological progress and to reduce operating costs and distribution. In a global approach, clusters, that form of organization, facilitates the crystallization of a new investment strategy, oriented primarily to the emerging knowledge-based competitive advantage.

## **5. Acknowledgement**

This work was supported by the project "Post-Doctoral Studies in Economics: training program for elite researchers - SPODE" co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007-2013, contract no. POSDRU/89/1.5/S/61755

## **BIBLIOGRAPHY**

- Porter M. 2005 Porter M. (2005) - *Clusters of Innovation*, Council of Competitiveness, Washington;
- Porter M., (2003) - *The Competitive Advantage of Regions*, The Indiana Leadership Summit, Indianapolis;
- Solvell, O., Lindqvist G., Ketels C. (2003) - *The Cluster Initiative Greenbook*, Bromma Stockholm;
- Tallman, S., Jenkins, M., Henry, N., Pinch, S. (2004) - *Knowledge, Clusters, and Competitive Advantage*, Academy of Management Review 2004, Vol. 29, No. 2.