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THE POSITIONING OF UNIVERSITIES IN COLLABORATIVE MODELS AS CLUSTERS IN A KNOWLEDGE BASED ECONOMY

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Abstract

The most significant research about knowledge based economy is concentrated on innovation. Research about entrepreneurial thinking at the university level and positioning of universities in collaborative models as clusters are in the early stages.

The new approach that we propose in this research is positioning the university as a main promoter and integrator of organizations in clusters and innovations enterprises networks in a global network of knowledge.

The results of this research are based on data that was obtained through questionnaires from organizations that are active in the ITC industry in the region of Bucharest-Ilfov. These characteristics are representative for different types of clusters.

Keywords: economic cluster, institutional cluster, objectives for cluster establishing, specialized knowledge

JEL Classification: I23, L26, P13, O32

Introduction

The new positioning of universities is correlated with the models of knowledge based economy (Audretsch and Thurik, 2000) and with the mentality change that is reflected at the university level (Bodea and Roșca, 2006).

That is how universities are guided to dedicate themselves to solve practical problems, to mediate science and technology, to offer research material with a profound practical character.

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The research is based on the results obtained from the project “Collaborative Systems and Mechanisms Specific to Economic Clusters and Company Networks in Knowledge-based Economy”, that is coordinated from ASE Bucharest and includes four National Research Institutes (INCD) and 1 ONG (NGOs) and 1 SME (Small and Medium-sized Companies).

The project is financed by UEFISCSU and belongs to the National Plan for Research and Development 2007-2013- Partnership, Research Field Socio -Economic.

Based on the literature in the topics entrepreneurial education, entrepreneurship, knowledge based economy and innovations clusters are made various conclusions which can represent new opportunities for research (Sternberg, Bergmann and Lückgen, 2004, Klaus 2004).

The analysis is related also to the positioning of universities collaborative models as cluster in the knowledge based economy.

1. The university and cluster establishment

Universities are traditionally perceived as conservative institutions, which rigorously defend their freedom of educating and researching. Reinforced in 1980 through Magna Charta Universitatum, this liberty is usually not observed by the academic society. However in recent years universities started to be better appreciated for the way they fulfil their public duties, in the way they treat their stakeholders and for their role as a promoter of the development towards a knowledge based society and economy (Stancu, 2010).

The university has to promote a new kind of thinking, a change from linear thinking in the direction of non linear thinking that has to be followed from a new didactical approach (Brătianu and Vasilache, 2009).

One key element that pushes an entrepreneurial university in the business world and can reduce the gap between theory and practice through knowledge transfer is the *university incubator*. Establishing enterprises in the economical environment accelerates the process of scientific and technological knowledge transfer. A successful technological transfer mostly depends on the place where the training took place and on the mentality in running a faculty (Linda, Magnusson and Sjölander, 2003).

The performances of university can be also quantified through the success stories of university incubators. These are analysed considering the following elements: the organisational network, the services offered, criteria for entering or leaving the incubators, the experience of the employees (Lefter, Deaconu and Nica, 2008). The studies show that the more powerful the relations between the members of the network the higher the growth.

In the knowledge based economy the university has to play a new role as a an entrepreneurial university and a integrator of enterprises in clusters and other collaborative networks.

Etzkovitz, Webster, Gebhart and Terra (2000) argued that universities have to reconsider their traditional primary role as educational providers and scientific knowledge creators to a university model that incorporates the additional role of the commercialization of knowledge and active contribution to the development of local enterprises and cluster establishment.

The research developed from Global Cluster Initiative Survey (Sovel, Lindquist and Ketels, 2003) identify more than 500 cluster initiatives in the world. The objectives of cluster creation are classified in 6 main groups as is indicated in the figure no. 1.

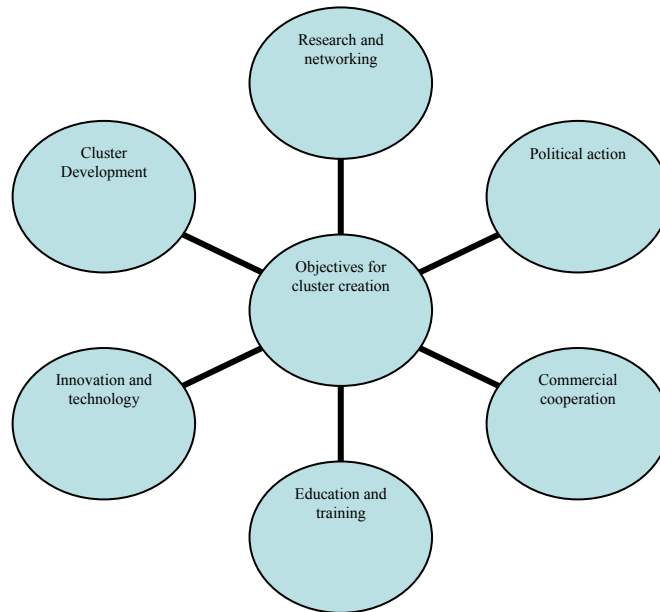


Figure no.1: Objectives for the initiatives of cluster establishing

The research indicates that the main objectives for cluster creation are correlated with the new objectives promoted by an university. On the other side, there are research studies that confirm that universities can play also the central role in cluster creation. A well-known model for cluster creation was developed by Markusen. From cluster structural point of view Markusen (1996) defined three clusters types: *district industrial district*, „*Hub and Spoke*”, *sateli cluster* and in addition *institutional cluster* (Paytas, Gradeck, Andrews 2004). Institutional Cluster known also as state anchor cluster is based on public institutions or NGO, as, research labs or universities. The characteristics of institutional cluster have implications on the region competitiveness and for its sustainable development (figure no. 2).

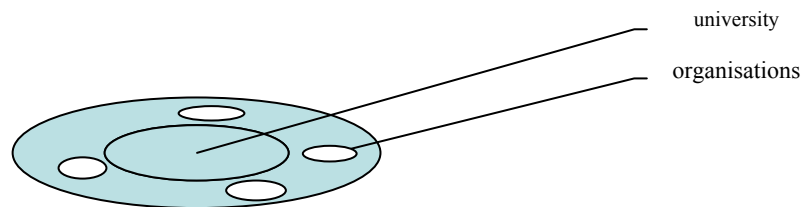


Figure no. 2: Institutional cluster

Source: adapted from Markusen, 1996, p.297

In a cluster the universities and the research centre are the forces that promote the innovation process. The main characteristics for these are:

- Effective participation at the effort for cluster development.
- Create and support the technology transfer offices.
 - Collaborate with the enterprises and with capital societies in order to improve the process of technology transfer.
 - Comparative analysis of the process for commercialisation of intellectual property rights that belong to universities and promote new methods for efficient knowledge dissemination.
- Adapt the university curricula in the research to the demand of local clusters.
 - Create specific institutions for clusters in order to promote the collaboration between academic environment and industrial clusters.
 - Collaborate with the local industry for establishment excellence bodies in the university that can differentiate the university with complementary strengths to local industry.
 - Integrate the research and training activity with the local demand.
 - Participate at the recruitment process of enterprises.
 - Support the effort of professors and students start-up through entrepreneurial education, finance and consulting.

The base of the new value model of cluster in a knowledge based economy is represented from specialised knowledge in universities that promote an unicity character (figure no. 3). From management point of view the cluster performance is measured also through the mass to insure the specialised knowledge and the quality of this knowledge and also through the possibility to create new knowledge (Heidemann and Lassen, 2007).

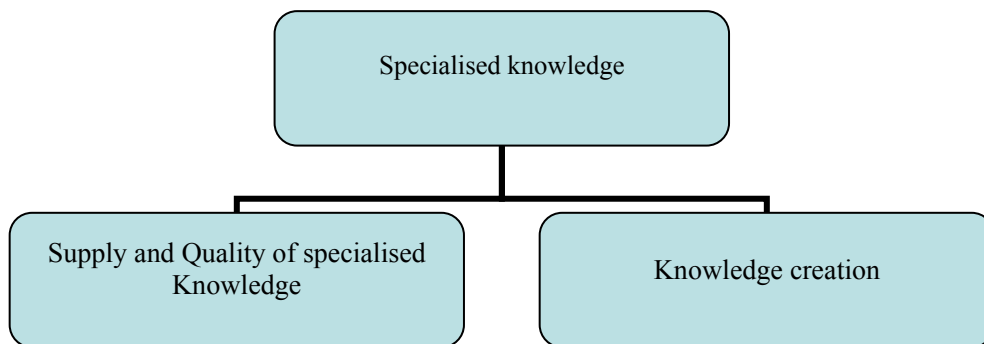


Figure no. 3: Differentiation of knowledge that contribute to cluster performance

2. Research related to the role of an University in cluster establishment process in Romania

The research was realized through survey, based on questioners, at the level of enterprises from Euro-region Bucharest-Ilfov that have potential characteristics for many types of clusters, and more representative are ITC clusters. The enterprises from this sample were selected under the principle of random selection.

The chosen process was that of random sampling with no rehearsal, being represented by 98 companies from ITC industry, which provides for relatively accurate result.

The questioner has 19 questions, out of which 3 are representative, 10 refer to the concept of clusters and its importance to the Bucharest-Ilfov region, and 6 referring to the importance of universities in the collaboration between companies, through its cluster like mechanisms and as a promoter of knowledge.

The structure for these enterprises is represented in figure no. 4.

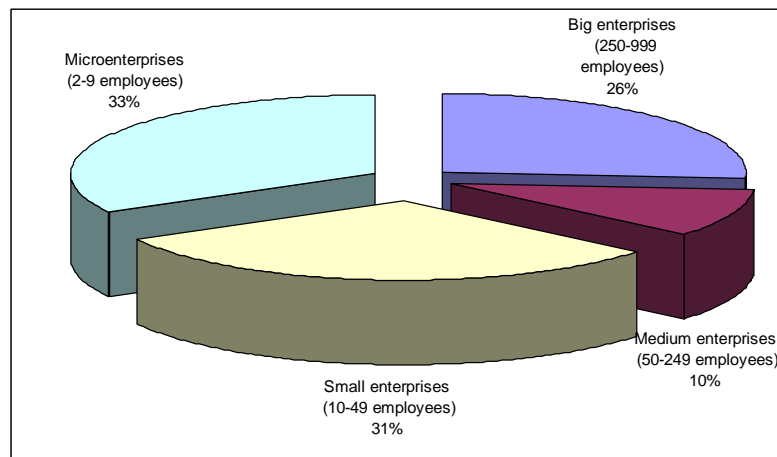


Figure no. 4: Structure of respond enterprises

A key factor for cluster establishment is represented by the cooperation potential between different enterprises in the same region.

The collaboration potential between enterprises in the Region Bucharest-Ilfov is shown through the perspective of their historic collaborating relations and on the basis of their projects.

The results show that these companies tend to remain independent, which demonstrates the weak points of Romanian enterprises in their ability to collaborate and develop innovative projects with other companies (figure no. 5).

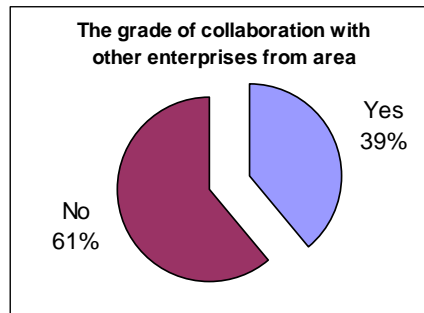


Figure no. 5: The collaborating potential of companies within the Bucharest-Ifov area on a regional level

The differences involving the collaborations between companies and universities or other institutions of R&D are greater in Romania than in other EU countries (figure no. 6).

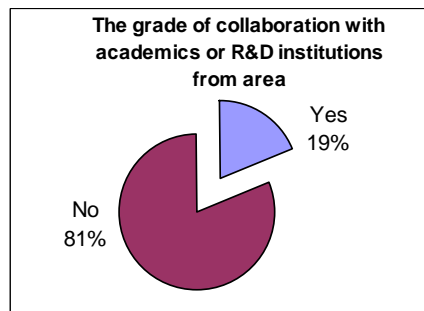


Figure no. 6: The observation potential of companies within the Bucharest- Ifov region regarding the academic and research field

With all the registered differences the majority of respondents consider that clusters can play an important role in the Romanian economy and permit a regional specialization, which will develop a competitive advantage, for example in the ITC field (figure no. 7).

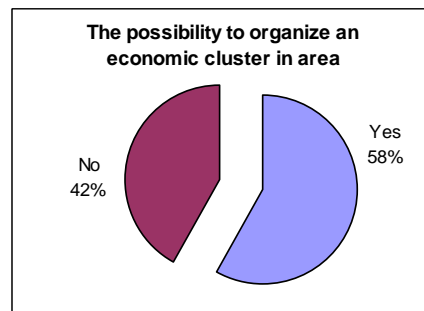


Figure no. 7: Potential of developing a cluster in the Bucharest – Ifov region

Analyzing the relevant factors that play an important role in the development of economic clusters, we can observe that universities have a very dominant role, contributing to the

theoretical aspect, but also as a Research and Innovation Institution. The most important institutional factors that influence the activities of clusters in Romania are shown in table no. 1.

Table no. 1: Main institutional factors that influence the activity of innovative clusters in Romania

Institutional factors	Characteristics
Ministry of education, research, youth and sports	It contains the UEFISCU, CNCSIS and AMCSIT Politehnica – the coordinators and financers of national Research and Development activities, according to the National Program of Research and Development - PNCD II
The agency of regional development	They propose regional strategies and programs for research and development and priorities these activities on a national level
OSIM	Is a governmental organ specialized in the insurance of industrial property (patents, brands, industrial design, different plants etc.)
Members of the National Network for Innovation and Technological Transfer (ReNITT)	It contains 19 information-technology centres, 13 centres for technological transfer, 16 business incubators and 4 scientific parks and IT specialty providers.
National Institutions of Research and Development	46 INCD covering all 9 domains of the PNCDI II
Universities	Over 56 public universities and 18 private universities, who also have R&D activities.
The Romanian Academy	120 Research and Development institutions covering a large spectrum of fundamental researches in the scientific and humanitarian domain.
Professors with predominant Research and Development activities	Estimated to have over 31.000 members in 2008
Professional researchers	Estimated to be over 39.000 at the end of 2008
Professional appraisers	Selected through different data bases of the CNCSIS, CNMP, AMCSIT
Companies with state capital and autonomous institutions	Estimated 100 such societies with Research and Development activities
Companies with a predominant Research and Development activity	Estimated over 300 such companies with predominant R&D activities.
Private companies (big, medium and small)	Participate in different such activities either self financed or through the state budget.

In figure no. 8 we show the positioning of the academic and Research-Development-Innovation environment in the process of sustaining the development of clusters. It can be observed that these institutions individually have an important role in this process, but not a dominant one. The knowledge based economy will force universities to focus more on R&D activities, which will allow it to become more involved in the process of promoting business clusters.

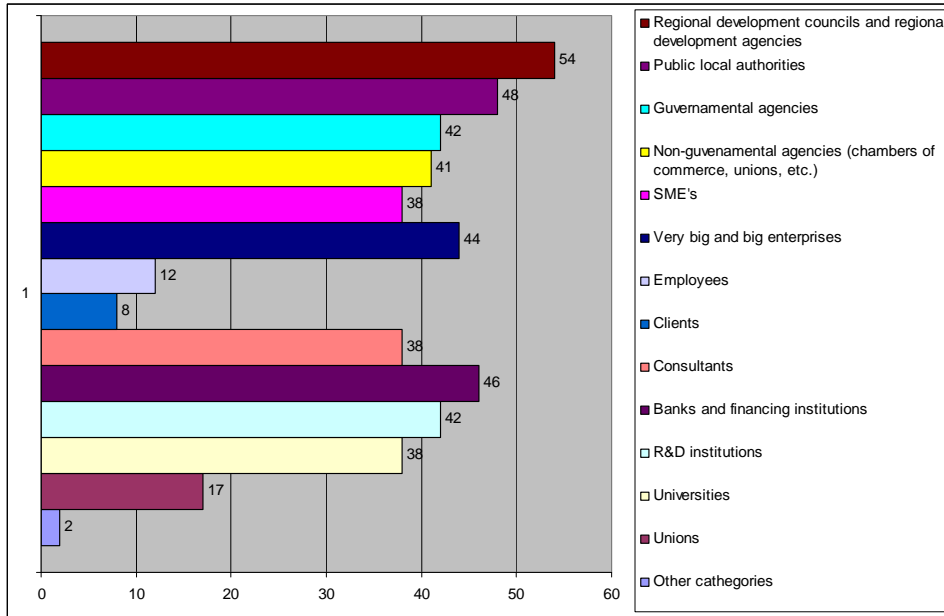


Figure no. 8: Factors that has to support the cluster creation

Furthermore, taking into consideration Markusen's model, we can observe that the institutional cluster, having universities and foundations as its centre point, can be very successful for Romania (figure no. 9).

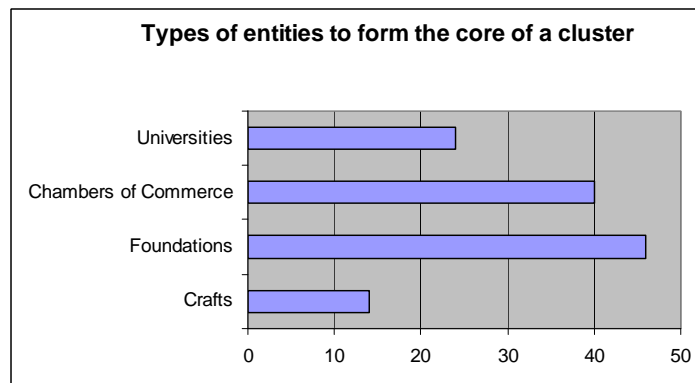


Figure no. 9: Core entity for cluster creation

In contradiction with the present economical crisis most of the respondents consider that the Bucharest-Ilfov region will have a significant development in the next 10 years, which will allow the development of cluster type concept in other regions of the country as well (figure no. 10).

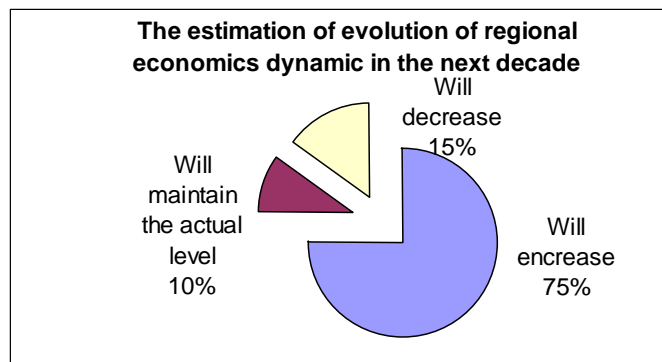


Figure no. 10: Dynamics of Euro-region Bucharest-Ilfov

Conclusion

The analysis of responses regarding to the integration of enterprises in collaborative models as clusters and the collaborative degree with others organizations, including universities, indicates that these processes are in an initial phase.

If we focused only on the collaboration between enterprises and universities we realize that this collaborative process is not too much developed and is significantly reduced in comparison with EU.

As a matter of fact the responses consider that models as clusters have an important potential for regional development and can contribute in order to obtain competitive advantages.

Regarding the role of universities in this process to establish clusters we achieved the conclusion that universities play an important role. If we add at these results obtained for the universities also that these are related to institutions for research, development and innovation we can conclude that these institutions play a significant role for the initiative of cluster establishment.

We have to remark that universities can also be the core of clusters and can integrate others organizations with the same objectives.

The final conclusion that results from this paper is that models as clusters will increase in the knowledge based economy and the universities will play an important role in the process of initiate a promotion of clusters.

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