SUCCESSFUL INNOVATIVE CLUSTERS IN ROMANIA – A POSSIBLE MODEL

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Abstract
The present study proposes the construction of a successful innovative cluster model which will help creating strategies and policies to support the Romanian economic growth and development in the medium and long term. One such architecture designed for supporting innovative clusters, including by attracting foreign capital within clusters order to increase their competitiveness, addresses some concrete measures both in terms of organizational system and management strategy as well as the funding system of clusters. The paper is also emphasizing the multiplicity of factors that are contributing to the creation, to the progressive development and to the success of clusters, the activities developed and the relationships established internationally, so as to ensure that the clusters remain on the market and have a good visibility at national and international levels, essentially contributing to the success of cluster.

Key words: *innovative cluster, regional development, competitiveness policy, clusters management, clusters funding, innovative cluster model of success*

JEL Classification: *M13, O21, O30, G24, G28*

I. INTRODUCTION

The clusters develop over time, their evolution being able to spread over several years or decades in order to reach maturity. Their development is often defined by the environmental and economic factors of a region that may determine attracting more and more companies and other institutions, the process leading to the consolidation of the cluster, originally started from a conjectural event. There are also phases of rapid development of clusters, based on a great regional great potential which can be stimulated and put into value (Porter, 1998a).

The importance of clusters consists in the created economic benefits, benefits that can comprise several areas. Thus, it has been observed (Porter, 1998b) that the efficiency of the component companies of a cluster is distinctly superior compared to the case where these would operate in isolation. This aspect is explained by the far more efficient use of assets and more specialized suppliers with shorter reaction times. Another benefit arises from the increased capacity for innovation. When cooperating, companies and research institutions can achieve higher levels in research - innovation, being stimulated in the innovation process by the permanent connection with customers and other companies. The continuous concern for innovation has led to the concept of innovative cluster (Porter, 2001), a topic to whom there are dedicated permanent new studies. Finally, last but not least, the companies within the clusters are less susceptible to failure and the business development level tends to be greater in the clusters.

An important factor that leads to the economic success of a cluster is the government through the system of government policies, together with the governmental agencies and other "collaborative institutions" (Porter and Emmons, 2003) facilitating interaction between cluster participants by creating networks, specialized platforms and opened collective action that enable an easier and faster circulation of ideas in order to improve the assets utilization of the companies within the cluster and the cluster success (Saxenian, 1996). These practices conduct to the efficiency amplification of clusters and accelerate the growth and development process of the newly created clusters.

The public sector can also play a central role in the training of the cluster members and other private sector organizations, in order to cooperate (Cortright, 2006). There may be multiple connections not only among the respective cluster members, but also between several categories of clusters within a region or between the cluster and independent providers companies. A strong cluster has an impact not only on its sector but also on the related industries, being a multiplier of growth owing to its numerous connections between industrial sectors.

II. SPECIFIC ARCHITECTURES AND INFRASTRUCTURES IN FAVOUR OF A SUCCESSFUL INNOVATIVE CLUSTER MODEL

Romania ranks among the developing countries that have certain economic characteristics specific to the emerging economies. The biggest problem faced by Romania is the deficit of capital. Therefore, in order to sustain the economic growth and development of the country it is imperative for the Romanian state to develop a set of targeted policies, through all the levers at its disposal, concerning the attraction and capitalization in the productive sphere of any sources of capital, both domestic as well as those that come from outside the country. If the internal sources are often limited, the external sources in the form of direct investment are representing a genuine support that can contribute to economic growth and development in Romania, as it appears to be the case of many other countries.

At the present stage of socio-economic development of society, many countries on all continents have adopted and successfully perform policies of economic development by promoting and supporting innovative clusters. They are currently regarded as the best and most effective solution that supports the regional development and therefore, the country on the whole, by increasing the employment of the workforce, by generating added value, by contributing to GDP growth etc. However, clusters are the fastest and most effective solution for implementing new technologies, being the melting pot of the activities of research - development - innovation (RDI) and of a permanent emulation in the innovation field.

In Romania there are now clusters that are operating in various fields, from traditional ones, such as wood industry, tourism, textile, metalworking, to sectors such as renewable energy, electronics, ICT, automotive, health, mechatronics, biotechnology etc. with great potential for development of innovative clusters and / or centers of excellence that are competitive nationally and internationally (Scutaru, 2015a; Scutaru, 2015b).

Concretely attempting to a pragmatic approach of the problem, in the present study we intend to build an architecture and a specific infrastructure for devising a successful innovative cluster model that should contribute to the creation of strategies and policies to support the Romanian economic growth and development in the medium and long term. In our view, such a supportive architecture in favour to sustain innovative clusters and attract foreign capital through multinationals within Romanian clusters in order to increase their competitiveness, should be based on several concrete measures that Romania should adopt as a priority, through a direct coordination at the governmental level, both in terms of **the organizational system and management strategy as well as the funding system.**

Regarding **the organizational system and management strategy** in the field, we propose the following measures:

- establishing a system at the national level for supporting a policy for clusters, starting at governmental level and propagate at regional level (through Regional Development Agencies - RDAs) and at local level (by county councils and mayoralties from any level);
- reestablishment The Romanian Agency for Foreign Investment (ARIS), which was practically dissolved on 10.12.2009, at which time it was created the Romanian Centre for Trade and Foreign Investment Promotion (CRPCIS); in 2012 CRPCIS was also dissolved;
- pursuing to attract foreign investors inside the clusters by all means , both through ARIS and also at the governmental, regional level (through ADRs) or locally; it is demonstrated the fact that the large companies are bearing new technologies and at the same time, they contribute in a very large extent to the development and increase of competitiveness of clusters in which they locate through their massive investments they produce;
- clear and objective identification of the areas in which Romania has the viable potential for developing innovative clusters and/or centres of excellence, competitive at national and international levels in accordance with the strategy of smart specialization supported at EU level (European Commission, 2010); this request was achieved, in principle, if we consider that there is potential for still untapped fields;
- the necessity of establishing a strategic management of innovative clusters and of the competitiveness poles through which these can assign their development strategy on short and medium term and an action plan that monitors the achievement of the assumed indicators. Thus, they will receive funding as matter of priority, in conjunction with the activity performed in the areas of smart specialization;
- encouraging partnerships foundation between Romanian clusters and, especially, between these and the clusters from other countries in order to exchange experience, specialization of workforce, creation of communication networks, of innovation platforms etc. Establishing such partnerships can take place, concretely, by setting up an agency for the internationalization of the clusters that should be engaged in finding partners clusters in other countries willing to cooperate with Romanian clusters and also the agency should identify sales markets for the exports of the Romanian clusters;
- the creation of research laboratories that would be integrated within the companies inside the clusters or the development of the existent ones, independently, or within the universities that are members of the clusters;

- Supporting the creation of social networking within each cluster in which all members should have access to specialized information exchange, aspect that fosters the creativity and the innovation;
- the creation at national level of an effective program for maintaining into the country the higher education graduates, knowing the fact that Romania is annually facing an exodus of "brain drain"; Clusters are the most conducive environment for job creation and business deployment or, where appropriate, of activities in the RDI domain;
- conclusion of partnerships and research agreements with the multinational companies by the Romanian companies or research laboratories;
- Creation of an effective enforcement system on the market for innovation. It is known that Romania produces annually several inventions, but very few of them are sold on the domestic market; most of them end up being exploited and put into application abroad;
- establishing at national and, especially, at regional and local levels of an effective system of agencies for qualification and requalification of human capital, adapted to the rapid changes on the labor market;
- creating a studying agency at national and regional level in the labor market in order to anticipate the requirements in the field, adapted to the current pace of development of technologies that should work closely with the agency system of qualification and requalification of human capital.

Regarding **the clusters funding system**, for increasing the process efficiency we propose the following measures:

- creation, at a governmental level, of an annual budget that supports a system of innovation funding at the level of clusters and creating new technologies. The funds that fuel this budget can originate from both internal sources of capital, from European funds or from other funds;
- nominating by the state Government of at least one bank that will create and provide a system of credit facilities for SMEs from clusters composition, both in terms of the level of interest rates and also the credit reimbursement period. Such a measure would have a double effect: on the one hand, it financially supports the companies in all phases of their development, in both the start-up period and also along the way, and, secondly, would determine the SMEs that are not members of clusters to adhere thereto, depending on the activity, by virtue of the possibility of contracting convenient credit; one of the banks which could be subject to this measure may be CEC Bank, considering that it is a bank with Romanian capital, not privatized;
- involvement of all commercial banks into a supporting program of the SMEs in clusters by establishing a system of credit facilities;
- supporting the development of clusters funding by means of venture capital funds and of investments of business angels type; also supporting the localization of these investment sources inside the clusters;
- encouraging clusters sponsorships by the large companies or by those with high profitability by reducing taxation on profit;
- identifying any other sources of investment at international, national, regional or local level that should be directed by the clusters members.

III. A POSSIBLE *MODEL OF SUCCESSFUL INNOVATIVE CLUSTER IN ROMANIA*

The cluster analysis may help the economic diagnostics of a region in order to identify certain effective ways of modelling the economic future of the region, given that the cluster is the main engine of the regional economy development, and not the isolated companies (Cortright, 2006). The new economical approaching perspective leads to streamline activities due to the fact that the work is done in groups of companies on common issues towards a common strategy and not by individual companies. This leads to identifying the strengths and needs for the companies competitiveness cluster. Clusters organization and their needs are different, depending on the economic sectors in which these operate. Different clusters have different needs. There is no recipe for success that can be applied to all types of clusters.

There exists a multiplicity of factors that are contributing to the creation, to the progressive development and to the success of clusters, the activities developed and the relationships established internationally, so as to ensure that the clusters remain on the market and have a good visibility at national and international levels, essentially contributing to the success of cluster. In a symbolic vision that presents their smooth merge, these determinants are: The funding system, The presence of large companies, The specialization in cutting-edge fields, Attracting funding in the form of FDI, RDI, The presence of universities, Requalification of human capital, International visibility, Professional training, Qualified and highly qualified personnel, Internal social networks, Entrepreneurship.

Of course, in addition to the these factors, there are a number of elements behind them, which bring their contribution to the success of a cluster and its maintenance on the market. For instance, we consider being of crucial importance the permanent concern for innovation activities, technology transfer and application of innovation products on the market. Also, creation nationwide of an investment program in the research

environment that contributes to the creation of academic centres of excellence capable of competing globally represents an important determinant in the success equation of a cluster.

An ingenious solution seems to be alike, opening local offices of Venture Capital investors and Business Angels investors within the clusters, even in the proximity of the place for innovation in order to ensure continuous funding sources. The model belongs to the American clusters, but it has been taken over successfully by the European ones. The fact that in USA these two types of financing cover about 40% of total funding of a cluster indicates the effectiveness of the method and the importance that is given (Alcimed, 2008).

Noteworthy it is also the permanent concern of both the American and French clusters of attracting foreign investment by recruiting large companies within their clusters (Alcimed, 2008). This form of funding is regarded as an intensive capital inflow and also of advanced technologies that contribute to the process of innovation and continuous research within a cluster.

By taking over models of best practice from international experience, we are proposing a possible model of successful clusters adapted to the specific of the Romanian economy which combines various forms of funding, including funding from multinationals capitals, all these being supported by a very coherent system, coordinated by the Government of Romania or by another state authority delegated by the Romanian government.

With this method there can be achieved simultaneously two objectives: on the one hand, attraction of FDI within the clusters – that contributes through funding and specific technologies to the development and success of clusters, and, on the other hand, the existence of clusters and the potential which they present – that stimulates the foreign investors to locate within these clusters contributing to their development and success. In other words, there is created a two-way relationship between clusters and foreign direct investment, which contributes to support and mutual reinforcement.

The fact that Romania has great potential in areas such as ICT, health and life sciences, renewable energies, mechatronics, biotechnology, tourism etc. offers at the same time, for the foreign investors great business opportunities and for Romania greatest opportunities to attract FDI. We therefore consider to be of crucial importance the elaboration, by the Romanian state, of some adequate policies for creating and stimulating certain effective ways of financing the clusters, including by attracting FDI which will capitalize this opportunity. We believe this could be also a very effective method of increasing foreign capital attracted within the Romanian clusters that contribute, along with the domestic capital, to the financing and growth of the clusters competitiveness, nationally and especially internationally. A possible model for successful clusters in Romania is shown schematically in Figure 1:

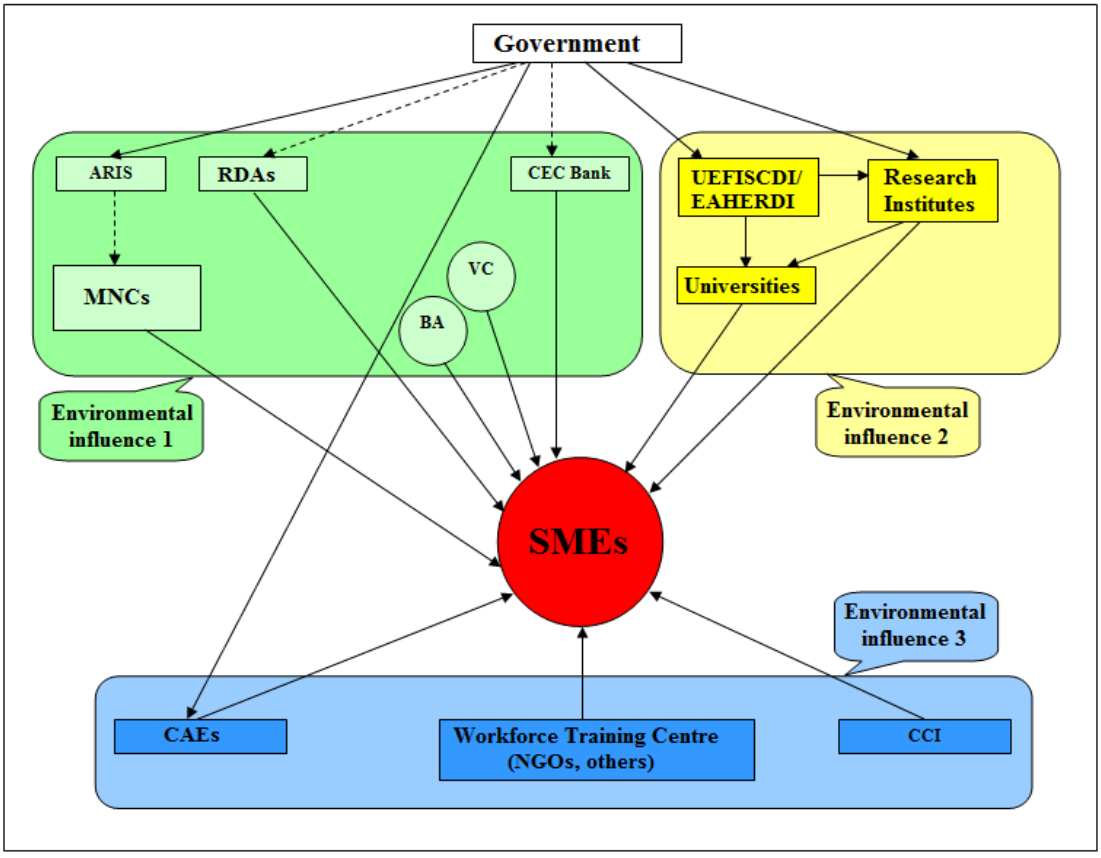

Figure 1. A model of developing a successful innovative cluster

As it can be observed in Figure 1, the model of development of innovative clusters is focused on SMEs from the clusters composition, as main actors, while the main authority that coordinates the key policies for supporting cluster development is the Romanian government.

Within this model there are three essential environments influence, namely:

Environmental influence 1 – Public and private funding,
Environmental influence 2 – Public and private research,
Environmental influence 3 – Professional training.

The Environmental influence no 1 – Public and private funding is composed mainly from a few types of institutions and investors that play a key role, both on public and on private funding.

Regarding the **public funding**, this comes from several institutions, namely:

- **Government**, by means of a State Fund for Innovation created to support SMEs in clusters composition; The State Fund for Innovation supports research and innovation projects proposed by clusters, depending on certain criteria, projects selected by a government commission appointed in this respect;
- **CEC Bank**, which is the main bank designated by the government that provides preferential credits to SMEs through various schemes State aid for the creation of start-ups, spin-offs and research programs, and innovation proposed by SMEs . This bank is partially backed up with funds from the government and represents the principal governmental instrument of financial support from the state for clusters; apart from CEC Bank, any commercial bank may grant preferential credits to SMEs within clusters under the same conditions;
- **Research and Development Agencies (RDAs),** these agencies monitor the implementation of policies for economic and social development at regional level, being supported partially with funds from the government which are further directed towards SMEs within clusters. The rest of the funds that RDAs manage and direct to SMEs are coming from European funds and other sources of funding;
- **The Romanian Agency for Foreign Investment (ARIS),** an institution required to be re-established, supported with funding from the Romanian government. It has as main functions the application of policies of attracting and promoting foreign investment and provides specialized assistance to foreign investors regarding the opportunities offered by the Romanian investment environment. This applies the government policy under Government Emergency Decree no. 85/2008 and under the legislation subsequently issued which provides support measures from the Romanian state in order to stimulate the foreign investment in accordance with Community legislation and the principles of sustainable development.

Regarding the **private funding**, this comes mainly from three categories of investors:

- **Multinationals**, that can bring an outstanding contribution to the clusters funding through the Greenfield type investments, mergers and acquisitions, corporate development etc. and, most importantly, through investment in the research and development departments within clusters,
- Private investors such as **Business angels (BA)** and **Venture capital (VC)**, which began to evolve and expand in Romania as well.

The Environmental influence no 2 – Public and private research is supported by the government through the **Executive Agency for Higher Education, Research, Development and Innovation** (UEFISCDI/ EAHERDI) and through the research institutes from Romania. UEFISCDI/ EAHERDI supports the research activities within the Romanian research institutes and universities between which there is a close cooperation in this regard. At their turn, the universities and the research institutes cooperate in close partnerships directly with the SMEs within clusters in terms of research and innovation projects. This collaboration is strictly necessary in terms of technologies transfer and their implementation on the market so that the product of creation and innovation to be materialized and find its applicability in the Romanian market.

The Environmental influence no 3 – Professional training has as the main purpose the continuous professional training activities of qualification and requalification of human resources from SMEs belonging to Romanian clusters. The policies in the field are formed and directed by the Romanian government through a specialized commission created for this purpose that has as main attributions the continuous correlation of the country areas of economic development, including the advanced domains, with the development requirements from both European and worldwide level. The aim is represented by the possibility to adapt quickly to new opportunities of qualification and requalification of staff in Romanian clusters;

The professional training policies are implemented through several institutions:

- County Agencies for Employment (CAEs);
- Chamber of Commerce and Industry (CCI);
- Various Workforce Training Centres such as NGOs, associations and the like.

IV. CONCLUSION

The paper analyses the construction of an architecture and of a specific infrastructure for devising a successful innovative cluster model that should contribute to the creation of strategies and policies to support the Romanian economic growth and development in the medium and long term. Such a supportive architecture in favour to sustain innovative clusters includes several concrete measures that Romania should adopt as a priority, through a direct coordination at the governmental level, both in terms of the organizational system and management strategy as well as the funding system.

The paper also emphasizes the multiplicity of factors that are contributing to the creation, to the progressive development and to the success of clusters, the activities developed and the relationships established internationally, so as to ensure that the clusters remain on the market and have a good visibility at national and international levels, essentially contributing to the success of cluster.

The model of development of successful innovative clusters proposed in this paper is focused on SMEs from the clusters composition, as main actors, while the main authority that coordinates the key policies for supporting clusters development is the State government. Within this model there are three essential environments influence, namely, Public and private funding, Public and private research and the Professional training of human resources.

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