

The Role of Clusters in the Improvement of Knowledge and Economic Growth. The Romanian Case

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Abstract

The concept of clusters has gained a lot of popularity in the past few years, policy-makers, practitioners and scientists having equally referred to it. Many policies have been initiated and implemented in Europe in the past few years with the purpose of stepping up the activity of the current clusters and of providing favourable conditions for the creation of new ones. The regulations of The European Fund for Regional Development for the period 2007-2013 and the new European documents explicitly include support for business networks, public-private partnership and clusters. Moreover, the Strategic Community Guidelines for the cohesion policy recommended, in accordance with the Lisbon Strategy, explicit actions for clusters under the priority for the improvement of knowledge and innovation for growth. They include guidelines regarding „strengthening cooperation among companies and public research/third institutions for education, like by supporting regional and trans regional clusters of excellence”. The paper intends to present the records registered in this field by Romania at regional level, and the challenges faced by the Romanian firms under the circumstances of the financial crisis and the lack of institutional framework and of clusters governance tools.

Key words: knowledge-based economy, cluster, SME, competitiveness, regional development

JEL Classification: O 25, R 38, R 58

1 Introduction

The concept of clusters has gained a lot of popularity in the past few years, policy-makers, practitioners and scientists having equally referred to it. Even though in Romania clusters have a small share in the country's economy, both because the authorities only recently got involved in the process of guidance and support for clustering but also because the economic environment – companies, business persons, local authorities and, to a lesser extent, the academic and research environment – show a limited availability for association and collaboration within the clusters. In this context I had the opportunity to take part to more national and international projects dedicated to this subject trying to analyse the background of the economic agglomerations in our country, to bring some conceptual clarifications for the Romanian economic actors related to clusters and to bring some contributions for the identification of clusters and of the potential for clustering of the manufacturing industry in Romania and for cluster mapping exercise. The paper intends to present the records registered in the clusters field by Romania, some results obtained in the framework of own clusters analysis made at regional level, and an example of cluster

mapping related to the potential for clustering of the activities in the Romanian manufacturing industry branches.

2 Clusters Analysis

Motto:

“In today’s creative economy, the real source of economic growth comes from the clustering and concentration of talented and productive people.” (Florida R., 2008)

Concept and definition

The clusters explain the empirical phenomenon of geographical agglomeration of economic and innovative activities. There are several definitions of cluster taking into account the aim and the specific context. In many cases there is no clear distinction between it and cluster policies or cluster initiative. While economically, the main purpose is a better understanding of this phenomenon, sometimes the concept can be understood also like providing a legal framework for financing or a model for statistical measurement of the respective phenomenon.

Many case studies have demonstrated the history, activities and the impact of economic / industrial clusters on regional development, occupation and innovation. European Cluster Observatory has identified a lot of case studies in Europe and published a Report of them and policy conclusions. All these case studies were prepared and co-financed as part of the Policy of Cohesion of the European Union in order to facilitate the learning process at a regional level. Clusters are expected to provide a fertile ground to companies, to raise their innovative capacity. Clusters represent a new and complex framework for continuous innovation which confirm the fact that innovation is a result of a interrelated dynamic companies, where competent organizations and skilled labour force interact in a complementary and constructive way for assimilating the existing knowledge and generate new ideas and new products. It is the root for ‘open innovation’ (Chesbrough, 2003).

Clusters and specialization

According to the European Cluster Observatory approximately 38% of the European labour force are working in enterprises that are in clusters. In some regions, this percentage goes up to 50% or in other at 25%, which shows different models of specialization in Europe. Approximately one fifth (21%) of this labour force is used in regions that are twice as more specialized in a certain category of clusters than the average of the region. On the basis of the specific methodology of ranking clusters according to the concentration of the labour force in industrial branches on established areas, there is a presentation below of the most evolved clusters in Europe, according to the European Cluster Observatory (table 1).

Economic prosperity among the European regions is related to the strength of clusters. Regions with a higher share of the work force in industries that belong to stronger clusters are generally more prosperous. Although there are many other factors besides clustering that might have an impact on prosperity, data indicate a clear proof of the fact that prosperity is significantly linked to clusters.

Tab. 1 The most evolved cluster in Europe

| Country | Cluster |
|-------------------------|-----------------------------------------------|
| Austria | Eco-energy in Upper Austria |
| Bulgaria | ICT in Bulgaria |
| Cyprus | Financial Services in Cyprus |
| Czech Republic | Packaging cluster in Prague region |
| Denmark | Food packaging in Southern Denmark |
| Estonia | IT in Tallinn |
| Finland | Forest industry in Finland |
| France | Microelectronics in Grenoble |
| Germany | Chemicals in Central Germany |
| Hungary | Biotechnology clusters in Budapest |
| Ireland | Shared Services in Dublin |
| Israel | MAGNET programs in Israel |
| Italy and Romania | Sports footwear in Montebelluna and Timisoara |
| Italy, Spain and France | Scooters in Southern Europe |
| Latvia | Wood processing in Latvia |
| Lithuania | Laser technology in Vilnius |
| Malta | Tourism in Malta |
| Netherlands | Flora industry in Holland |
| Norway | Oil equipment in Sørlandet |
| Poland | Aerospace in Rzeszow |
| Slovakia | Automotive in Bratislava |
| Slovenia | Toolmakers in Celje |
| Spain | Textiles in Catalonia |
| Sweden | Ventilation Systems in Västra Götaland |
| United Kingdom | Seafood in Yorkshire/Humber |

Source: European Cluster Observatory

European policy for cluster support

In the past few years a big number of policies have been initiated and implemented in Europe, whose purpose has been to step up the existing clusters and provide the necessary conditions for setting up new ones. These efforts can be defined as “policy for supporting clusters”. There are more than 130 national measures dedicated to clusters in around 31 European countries. The majority of EU member states have taken specific measures at regional or national level for developing clusters. In the European Union relevant policies and instruments have been designed to complement efforts in the field at both levels – regional and national. Various forms of cluster promotion:

- Example of cluster programs: Competitiveness Program in the Basque land
- Example of regional cluster initiative: ICT Cluster of Oulu (a successful networking)
- OMNIPAK Cluster: a regional ground-breaking cluster
- Cambridge high-tech cluster as support for the Cohesion Policy, which is more than a subsidy.

The goal that brought an added value was the Program for Territorial Cooperation 2007 – 2013, and whose goal was to support integrated territorial development, inter-regional cooperation and exchange of good practices – which is focused on innovation. 2 billion euro has been allocated for the 27 EU and inter-cluster activities that many regions benefitted from. The cluster initiatives and organizations are also modern instruments for regional development. Since there is a clear

trend towards more professionalism and excellency of the cluster organizations, this challenge has not been fully approached by all EU countries, thus running the risk of the cluster potential and public support being wasted. This challenge is aimed at improving the excellency of the cluster organizations all over Europe in order to render more effective the use of available resources and improved support of SME-s that are part of the clusters. The cluster policy will be an important part (about 25%) of the smart specialization strategy in the regions for 2014 -2020. Moreover, the level of R&D involvement in the cluster programs: R&D is a prerequisite of innovation.

The Romanian case

In this context, Romania makes great efforts for improving its industrial performance with the purpose of encouraging innovation in industrial processes and technology and promotes measures of encouragement to proceed to the “green economy” and modernization of the industrial sectors, including by promoting innovative clusters and collaboration between them and the academic, research and public administration sectors.

A comprehensive national cluster policy with well-defined goals and a subsequent action plan became visible starting with 2009. The National Reform Program 2011-2013—chapter Business Environment has a chapter dedicated to innovative clusters elaborated in the frame of a bi-lateral cooperation agreement between the German Government (represented by GTZ) and the Ministry of Economy-Directorate for Industrial Policies, the national authority regarding the national cluster policy.

The Ministry supported also the creation of CLUSTERO-The Romanian Cluster Association (<http://clustero.eu/>) with the following economic situation in 2012:

Tab. 2 Economic Situation of the Romanian Cluster Association in 2012

| Indicator | Value | UM | Average |
|-----------------------|--------------|-----------|----------------|
| Turnover | 15.006 | Mil RON | 1.000 |
| Number of enterprises | 255 | units | 17 |
| Export | 3345 | Mil EUR | 223 |
| Employees | 77295 | Persons | 5153 |

Source: www.clustero.ro

Five clusters that are members of CLUSTERO have the “Bronze label”-ROSENC, IND AGRO POLE, ELINCLUS, Romanian Textile Concept and Green Energy Biomass Cluster.

In Romania the cluster management is currently a big problem that has a larger European dimension. Clusters are either business or technology driven. Cluster management is a very complex task, requiring knowledge about the sector; but the cluster is acting also in communication and organization skills which are very difficult to be found in one person. The profile of cluster manager is unknown for many clusters. Currently, there is only SEENECO project for training cluster managers but accessed only by public authorities because cluster organisations are not eligible.

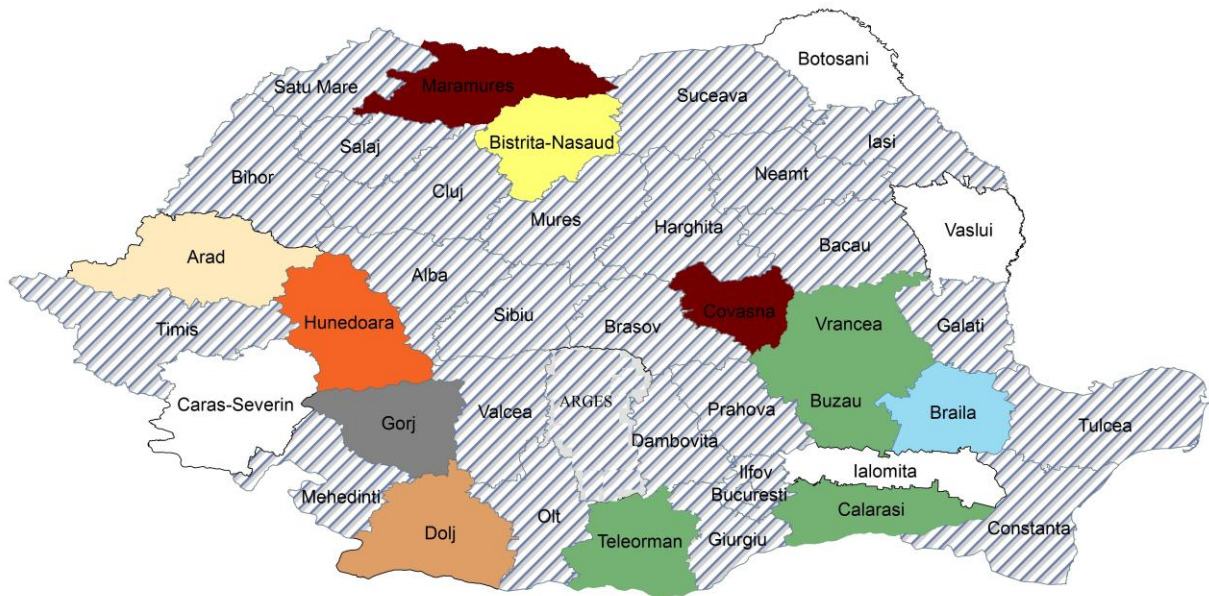
SWOT Analysis on Romanian Clusters' development in Romania











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| <p>Strenghts</p> <ul style="list-style-type: none"> -Large acceptance at public and private level for cooperation and clusters' development; -Regional Innovation Strategies (RIS) available; -Substantial potential in many economic sectors to develop clusters; -Human resources available; -Spatial proximity between enterprises; -Universities, research institutes, private research departments in enterprises available; -Both at a national and regional level and considering both business and research activities there were identified (by Jaspers Report, 2013) : <ul style="list-style-type: none"> - the importance of the rural economy, agriculture and biotechnology, agro-food, green growth and - the transition to a low carbon economy and maritime and marine related industries. -The most diverse area of activity incorporating electrical and electronic engineering, nanotechnology, materials (specifically electronic, optical and magnetic materials, materials chemistry, materials science and metals and alloys) and mechanical engineering, motor vehicle transport and other transport - as argument for smart specialization -Potential focus on smart specialisation including: textiles; machinery and equipment; wood and furniture | <p>Weaknesses</p> <ul style="list-style-type: none"> -Different and contradictory ways of understanding what clusters are; -The week role of the central/local authorities in clusters' development; -Incomplete legislation to regulate clusters' development; -Low capacity of human resources to cooperate consistently; -Mistrust between competitors -Difficulties in the absorbtion of EU funds -Slow pace of reform <ul style="list-style-type: none"> - Lack of knowledge about cluster management - Clusters are not familiar with the EU programmes and co-operation with other clusters from EU Member States. <ul style="list-style-type: none"> - Private funds were till now the sources of financing RDI in clusters and poles of competitiveness. -the entrepreneurship education and training is not included in curricula and this affects the supply of skilled people for R&D& innovation to clusters in a short and medium term. |
| <p>Opportunities</p> <ul style="list-style-type: none"> -EU cluster policy -The existence of European Territorial Cooperation Funds that finance cross-border and trans-European projects -Emerging industries either at an early stage of development or at the crossroads of several sectors/technologies is a powerful tool to develop innovative activities. -Cluster policy in respect of securing the presence of large firms: | <p>Threats</p> <ul style="list-style-type: none"> -Financial crisis -Possible decrease of public expenditure for R&D -Degree of correlation between the regional innovation and national cluster policies: -No appropriate conditions to use properly the structural funds in the next programming period 2014-2020. -Concerning innovation, there is already a |

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| <p>-Presence of large firms in clusters shape the specialization of the cluster. These clusters have a strong innovation base that supports R&D activities. Large firms within Romanian clusters play a catalytic role in a number of respects:</p> <ul style="list-style-type: none"> -they create a critical mass of experienced managers and workers; -they provide a customer and supplier base -they provide ideal conditions for high technology and -they have multiplier effects in terms of a region's local economy for materials, services and other clusters. | <p>significant gap between Romania and the European average. In the latest Innovation Scoreboard (2011), Romania scored as a modest innovator, with R&D expenditures in public sector at 38% of the European average, while business R&D investments at only 15%. Failing to support R&D in the context of cluster development will lead to further increase in this gap.</p> |
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In tide connection with the overview offered by SWOT analysis we have to distinguish between the economic clusters (already existed or emerged) and the potential of the Romanian economy for industrial clustering. Based on previews research projects dedicated to clusters during the last years (in the framework of more national and international programs) I came to the idea that it would be very necessary to point out this distinction in the industrial Romanian picture. For this goal I used both quantitative (location coefficient, specialization rate, Herfindhal index, Gini coefficient, Sternberg & Litzenberger index) and qualitative (interviews with politicians, representatives of the local authorities and of the business sector) methods. The quantitative and qualitative methods used have eventually led to identification of many domains of the manufacturing industry, with a potential for clustering: textile and footwear, wood processing, oil extraction and processing (oil equipment, including off-shore platforms), mining equipment, products of precision mechanics, electronic and electro technical products, transportation means (cars, wagons), chemical products, building materials (cement, glass, ceramics). These domains include all the components necessary for the existence of clusters, namely, the geographical proximity of companies, the adequate density of companies, special research units of the industry, relations of collaboration between the local stakeholders etc. All this information has been transposed on maps with the help of special software. We further present an example in this respect, namely, a map showing a clear and synthetic representation of the potential for clustering of some domains of the Romanian manufacturing industry, by counties and regions of development. The cluster mapping exercise is a relatively new approach, which has emerged from the very need of having a better and direct image on clustering and its economic performances.

The potential for clustering by domains of the Romanian manufacturing industry at regional and inter-regional level



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|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  = domain of textile industry |  = no potential for clustering was identified |
|  = domain of agro-food products |  = domain of machinery and equipment |
|  = domain of electric equipment |  = domain of footwear |
|  = domain of wood processing, including furniture |  = domain of transportation means |
|  = domain of electronic and optical products |  = crossing/overlapping of several domains with a potential for clustering |

Source: Own calculations

Worth mentioning is also the fact that the domains identified as having a potential for clustering are validated by reality, since in the Association of Clusters in Romania “CLUSTERO”, set up until now, a series of clusters were already registered during 2012 and they belong to the aforementioned domains (see <http://clustero.eu/>).

3 Conclusions

In the opinion of specialists, the most relevant European documents for the development of clusters in Europe are: the Communication of the European Commission accompanied by the “Report 2011 on European competitiveness” and the report on the “Performances and policies of

the Member States regarding competitiveness 2011”. The most important conclusions of these reports point to the fact that recovery from the crisis of the European industry is still slow and fragile, against the background of industrial competitiveness being more and more integrated, depending more and more on the performance of a diversity of big players in various sectors and locations.

At a European level there is a visible change of paradigm, from a sectorial orientation to a horizontal approach, based on innovation, specialization, creation of key enabling technologies.

About this country, having in view that in Romania, both the private sector and in the regional public institutions are not well familiarized with the idea of a cluster, a first step towards the development of regional clusters could be an awareness campaign on this topic and of checking the interest shown by companies and SME-s in developing such economic areas. This could be beneficial both to the awareness at a regional level of this concept and for helping the public institutions formulate better regional policies in this field in the future.

The report on competitiveness of the member states, 2012 edition, shows that Romania is lagging behind in some respects. The report places Romania in the last group, that of countries which need to make efforts to catch up with the other EU states in what concerns industrial competitiveness. At the same time, it is important to improve governance in the business environment and quality of regulations.

For Romania which is now specialized in the textile industry, footwear and basic metallurgy, on a long term, the challenge is to proceed to smart activities, with a low consumption of carbon and effective in using resources, that should allow it to also overcome the current situation characterized by a work force with low qualification and energy-intensive sectors.

The conclusions of our communication, based on the document achieved in 2013, the Stimulation of local clusters – a predominant factor of regional competitiveness, are conducive towards the idea that, taking into account the recommendations of the European Commission, the cluster promotion policy in Romania should be corroborated with that of stimulating investment in R&D both at private and public levels, encouraging as much as possible the development of industries of high technology.

According to the most recent report made by Jaspers (2013), on the analysis of sectors in this country, at a national and regional levels, of the specializations existing in the economy: the food products and agriculture, ITC, engines and other means of transport are considered by the authors of this report as being priority areas for smart specialization while sectors like tourism, wood processing and furniture, energy, machinery and equipment, textile and chemical and pharmaceutical sectors are priority areas for a smart specialization based on the analysis of the activity of research and development and on the wider discussions with the interested parties.

At the moment there is a gap of at least one stage in cluster development between Romanian and European clusters (generation-development-excellence-internationalisation), i.e. Romanian clusters are in the generation phase (few have passed into the development phase) while European ones find themselves in development-excellence phase.

The vital issue in point of promotion is how the clusters are being financed, more exactly, to what extent the cluster policies in Romania support networks and partnerships. Worth mentioning is that most of the clusters in Romania are in a stage of generation, as it came out of the research done so far, including by the authors of this communication.

Development of cluster landscape in Romania relies on strong commitment of driving institutions, given the lack of state financial support. As an example out of the 45 clusters and poles of competitiveness in Romania, 32 are industry driven, 5 by the Regional Development Agencies and 8 are research driven. 15 of the clusters are members of the Romanian Cluster Association-Clustero.

Recommandations

The abundance of concepts referring to the similar economic structure (cluster, pole of competitiveness, urban cluster, pole of excellence etc) is leading to confusion, so is the overlapping of competences of several ministries dealing with clusters. The integration of concepts and policy making structures would be most welcome. There is need to create a database on clusters and cluster policies in the European regions to be used further on in other projects .

In this respect by involving RDAs as Intermediary Bodies in the management of Sectorial Operational Program – the financing scheme dedicated to clusters (already in March 2013 the MA-Ministry of Economy signed a Framework agreement which delegates implementation tasks related to SME support schemes) could bring them in conflict of interest (as cannot be simultaneously implementing authority or cluster partner) and will limit the type of contribution/support RDAs can offer to their regional clusters or a RDA should finance all clusters in that region.

Elaboration of smart specialisation strategies in terms of methodological approach, selection of topics, stakeholders involved, evaluation tools, monitoring system, etc.

Financing cluster models: types of programmes, eligibility, value;

HR Development Programmes: fostering education to business cooperation;

Technology Transfer and Innovation: support for collaboration between business and R&D;

Cluster internationalisation: support programmes, selection of markets to be addressed.

It is also necessary to *create synergies between ClusterPoliSEE project and other projects* such as Adriatic Danuban Clustering (ADC), SEENECO, INTERREG IV C, CLUSTRAT, PA 8 of SUERD etc on Community programmes (early generation of new projects; turn- around of old projects-ideas-results etc), self-managed facilities (B2B support, sharing opportunities; monitoring of domestic environment), sectoral initiatives (new financial schemes; supporting CBC of clustering companies), database on clusters and cluster policies in the European regions.

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