Clusters – a potential model of development for cross-border areas

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Abstract: Starting from the definition of the clusters that Michael Porter formulated in 1998 the paper investigates approaches of clusters in practice in different fields and countries inside or outside European Union, captured in the scientific literature. The aim of the investigation is to find the positive aspects and the challenges of clusters and further to select those which can be used in order to build a development strategy in cross-border areas based on clusters approach.

Keywords: cluster, cross-border, economic development

Introduction

In case of cross-border phenomenon we can distinct two sides – holdbacks and obstacles and openings and opportunities (Slusarciuc, 2014). The first relevant ones for our paper are: different administrative levels, competencies or responsibilities, lack of specialized structures inside the administrations in the field of cooperation, the lack of local resources in partner regions, disparities between the economic development rhythms, the lack of direct crossborder relations between the social-economic actors, weak trade relations and difficulties in crossing the border. The latter relevant side is about the economic complementarity of the areas, organized relations and flows, the need for improving and developing new communication infrastructures in the cross-border areas, the European frame that encourages the cross-border cooperation through a specific policy, both inside the EU and with the neighbours. This area

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is marked by complexity and hysteresis that should be considered in any future projections (Slusarciuc, 2014). The partner countries can learn from past history and modify their status accordingly, the cross-border economic life being influenced by factors as the border permeability, interculturality degree, number and depth of the historical conflicts, the distance from the main economic center, etc. and factors that are arising from the recent developments in information technology and communications. The crossborder programmes are focused mostly on partnership and cooperation, where the first topic is economic issues for development. Priority is given to the partnership building that means a good step that should ease the future cooperation and help the stakeholders to focus more on the economic strategies and projects (Slusarciuc & Prelipcean, 2013).

The geographic area considered for our research as large and general is Romania – Ukraine cross-border area, where we propose an in-depth wider study on Suceava-Botosani-Cernivtsi multi-urban cross-border area, focused on new architectures of development poles with crossborder extending potential having as general objective to analyze the economic development poles that are located in the border areas and to identify the way in which the viable development strategies can be applied in the cross-border context. In previous researches (Slusarciuc & Prelipcean, 2013) we found that for supporting a viable economic development the main focus should be on supporting the SMEs growth, increasing the attractiveness of the area for foreign direct investments, improving the economic performance and competitiveness across the economy, particularly for research and development. In this frame we consider as hypothesis that building a cross-border network of clusters could be taken in consideration as important part of an economic development strategy in the area. The approach of clusters in a cross-border context at the Eastern border of EU is bringing novelty considering that the policies that are including clusters are focused nationally or at EU level but in a frame with a certain degree of homogeneity. Therefore, before preparing an investigation instrument that we want to apply to the stakeholders from the research area that can be involved in cluster development – enterprises, research institutes and universities, local administration and business organizations – we made in this paper a selection of cluster cases and approaches from which we will collect the important issues that should be included in the future investigation. The selection criteria were based on diversity of cases as geographic location, field, stage of development as to detach as many strengths that encouraged clusters and weaknesses that lead to failure and can be considered as lessons learned for future improvement. Therefore, the specific objective of this paper is to identify in the scientific literature and practice guiding marks for an investigation on field instrument that

will help in the wider research to confirm or infirm the hypothesis that building a cross-border network of clusters could be taken in consideration as important part of an economic development strategy.

General frame for clusters in Michael Porter's view

Most of the studies about clusters are starting from the definition that Michael Porter issued in 1998, "clusters are geographic concentrations of interconnected companies and institutions in a particular field" being possible a variety of members: suppliers of specialized inputs, providers of specialized infrastructure, channels and customers, manufacturers of complementary products, companies in related industries by skills, technologies or common inputs, universities, think tanks, vocational training providers, trade associations, etc. (Porter, 1998)

Porter underlines the importance of clusters development in poor countries, with cheap labour and natural resources, starting from the basic and with significant involvement of institutions and government. He puts the accent on the internal trade among the cities and the trade with neighbouring states and draws attention to the effects of concentration of economic activity in central areas recommending the dispersion and specialization in the country as he noticed in Germany, Italy, Switzerland or US as an approach with good effects on economy.

Starting from principles that raise from the special literature some researcher reviewed (Spencer, Vinodrai, Gertler, & Wolfe, 2010), a cluster is considered to have the following characteristics: *specialization* in employment, in an individual industry that is not geographically omnipresent, therefore it constitutes a competitive advantage compared to other locations; *co-location* between the non-omnipresent, specialized industry and other related industries, *scale or critical mass* in the cluster – defined in terms of total absolute employment; *specialization* in employment in the cluster, but now measured relative to the nation; *scope or breadth* across the range of industries included in the cluster, defined as local specialization in a majority of the individual industries included in the cluster.

In Porter's papers we identify reasons for encouraging clusters, from the view point of the region where these can be located and also from the point of view of the companies included in the clusters.

Concerning the region development, the competitive advantages can lie in local things as knowledge, relationships, motivation in the frame of the new approach of what competitive advantage means, respectively the increased productivity in using

the inputs, meaning continue innovation – sophisticated methods, advanced technologies, unique products or services. The proximity of companies and institutions and the stable exchanges among them help for a better organization of the value chain, fostering the coordination and trust, making the best use of formal and informal use of networks, alliances and partnerships. The advantage is reflected in an increased efficiency, effectiveness and flexibility. The stability and the success of a cluster can lead to formation of new business in order to fill the gaps of additional products or services or new products or services generated by the cluster inside innovation and development.

As far as concerning the companies, the business environment outside companies plays an important role therefore it is a favouring undertaking to shape and involve the environment to play in business development by cooperating among local administrative and governing institutions, universities or business associations for the competitive success of the region. No matters how technically developed are the companies if they cannot make use of high-quality infrastructure or without well trained employees. Porter (1998) considers that for companies that are part of a cluster there are various advantages: better access to employees and suppliers, improved access to specialized information and relationship resources, complementarities that raise the quality and the efficiency of the products or services in cluster, access to institutions and public goods, better motivation brought by inside competition and better measurement of the performances among the cluster members having the same business environment. The existence in the cluster of companies that use evolving technologies or new service and marketing concepts increases the innovative potential among the other members of the cluster that can generate further competitive advantage.

Also we identified factors that lead to the success of a cluster and factors that can lead to failure of it. Therefore, one of the factors that influenced the success of the Italian leather fashion cluster is the existence of multiple linkages and synergies that are participating in, linkages and complementarities across industries and institutions being important for competition. As an extension, Porter (1998) identifies cases of clusters that cross the state boundaries or even national borders, such as pharmaceutical clusters among New Jersey and Pennsylvania or chemical cluster in Germany crossing over in Switzerland. On the other side, as factor that can lead to failure of a cluster, non-conformity to standard industrial classification systems can fail to include important actors as Porter (1998) noticed in case of a medical devices cluster in Massachusetts that remained invisible for a long time because of this reason. Beside this, Porter

(1998) considers that without vigorous competition in winning and retaining customers associated with cooperation mostly in vertical with related industries and local institutions a cluster will fail.

Therefore, in Porter's view we find the base for reasoning any endeavour or strategy that includes cluster: motivation for start, both for region and enterprises, and some success and failure factors.

Relevant cases identified in the scientific literature

In the following we will go through the selected cluster cases considering diversity as geographic location, field, stage of development as to detach as many strengths that encouraged clusters and weaknesses that lead to failure and can be considered as lessons learned for future improvement.

In case of Russian cluster based to automobiles and in a development stage (Romanova & Lavrikova, 2008) the innovation potential of the cluster is generated mainly by the inclusion as members the academic and industrial research institutions, institutions of learning, innovation and engineering centers and centers of excellence and innovation-active enterprises. The enterprises benefit by methodological assistance, in order to ensure knowledge, skill, and expertise transfer, through engineering support of implementing manufacturing processes using leading edge technologies, development and making of production tooling and standard equipment and the adaptation of the quality management system to an ISO standard requirements.

An innovative example we found in the scientific literature (Laurie, 2008) shows how the historic preservation, which has most often been considered in terms of architecture and aesthetic appeal as opposed to a vehicle for economic development, can fortify economically a range of industries using the cluster based economic development theory. A city economic development strategy based on historical preservation of the landscape can be viewed in close relation with a cluster based approach in tourism, environmental management, housing and film making sectors. These industries can have their economic outputs amplified if developed as an integrated economic development effort, allowing consolidation of local resources, increased industry competitiveness and an investment that benefits existing sectors.

In case of Serbia, a group of researchers (Anicic, Vukotic, Zakic, Marko, & Laketa, 2013) considered that despite the fact that associating into clusters is considered one of the main drivers of economic development in local, regional and national level, clusters themselves are not enough to address the weaknesses in the

business environment, a solution being that they should become part of a strategy of competitiveness' increase. The Serbian clusters are formed in traditional industries based on domestic raw material base, necessary experience in production and favorable qualification structure of the labor force. Still, the international competitiveness of Serbian enterprises depends on the capacity of mutual cooperation at the local level, networking process that ensures expansion of business relationships, monitoring of development trends, sharing information about the strategies of other companies, openness to new ideas, collaboration with successful businesses, saving time and other. Moreover, considering that the development of those clusters is still at an early stage there is identified as being important the involvement of the state in terms of encouraging associations, building of an institutional framework and a favorable business environment for the successful development of these processes.

Linked to the promoted cooperation inside clusters as a success factor, a study on a textile and a surgical instruments cluster in South-west Germany (Staber, 2009), that was searching the ways the learning process can involve social biases, provides an explanation for the fact that many studies on clusters did not document the high levels of collaboration among companies that cluster theory predicts. It draws attention that the current literature approaches on collective learning as factor for cluster coherence sometimes miss the fact that in many clusters the learning is unevenly distributed and that learning may affect the change in a negative way. The author proposes an approach that considers both, the outcomes of learning and the processes that brought them about, as help for improving the theory. For our research there are relevant some of the study conclusions. The learning process in clusters are different, sometimes based on imitation, firms learning from each other, sometimes based on benefits from collaboration, firms learning with each other, but, learning is not always an interactive and communicative process, often being a biased process. In some clusters, collective learning is a variable and volatile process, possibly linked to the short history of the cluster, in other clusters, collective learning is a more stable process, rising from a strong historical collaboration and traditions.

Two Spanish researchers (Hervás-Oliver & Albors-Garrigós, 2008), who carried out interviews in Castellon indigenous glazing firms from Spain with affiliates in the Emilia-Romagna and Emilian foreign equipment firms from Italy with affiliates in Castellon, examined the process of knowledge exchange between clusters through multinational enterprises affiliates which form cross-locality networks. Also, the study presents evidence to show the importance of external ties and seeks to understand how the process of knowledge exchange occurs in cross-

locality networks of related clusters through multinational enterprises and their affiliates. One of their conclusions is relevant for our paper, respectively, policymakers should develop programmes to attract and involve multinational enterprises affiliates while establishing mechanisms to promote linkages of any order and foster cooperation and collaboration as part of the firm's strategies aiming a continuously generating local knowledge in order to upgrade the clusters and thus managing cross-locality networks. But the policymakers' efforts should be focused also on upgrading this knowledge, by providing research centres, courses, training and more on recognizing the necessity of the complementary industry from host clusters, attracting foreign direct investment (FDI) in complementary knowledge and helping multinational enterprises to open new markets through affiliates abroad. The researchers concluded as well that the participation of multinational enterprises affiliates complements and enriches local knowledge with knowledge from multinational enterprises affiliates internal networks and their study confirmed that external ties exist and matter because they complement the local knowledge.

In case of Bulgarian cluster (Christova-Murray, 2014) the following as success factors are considered: the funding from other sources than EU, the role of cluster management, early wins in market development, cooperation among companies from the same sector or city, orientation to a single direction, strategic thinking and consistent actions. One of the Greece clusters experience (Berikou, 2014) presents as success factors: intensive mapping activity and focus on existing regional strengths, development of a strategy and a set of targets, bottom-up approach with existing strong collaboration, monitoring framework for the results and review of the strategy and a strong cluster facilitator.

A group of researchers (Spencer, Vinodrai, Gertler, & Wolfe, 2010) proposed an alternative methodology to the Porter related methodology for identifying clusters and then they applied in the Canadian context. The used methodology tested if the geographical clustering of economic activities leads to superior industrial performance and regional competitiveness. The two important findings of the analysis are relevant for our research: firstly, when industries are located in an urban region with a critical mass of related industries they tend to generate higher incomes and rates of employment growth and secondly, the prevalence of clustering within a city-region is positively associated with income levels and employment growth. They found that the big-city advantage was especially pronounced for service-oriented clusters and in knowledge-intensive manufacturing clusters. On the other side, smaller centres were found to be

specialized in resource-based clusters such as agriculture, mining, forestry, oil and gas, as well as more traditional manufacturing clusters, such as automotive and food.

An example of a projection of a competitive cluster in Croatia (Sindik, 2014) is a sector specific not-for-profit organization which brings together the business, scientific and policy making communities in a formal structure known as 'Triple Helix' concept, with the intention to gather the best players in their field – small, medium and large companies, business clusters, public and science and research institutions in order to develop synergies and cooperative efforts. But the main challenges they face, beside the reality that the Croatian economy has been in recession since 2008, with a lowered level of GDP, narrow export base and insufficient competitiveness and existence of regional disparities, are a real challenge: under-developed knowledge based growth factors and insufficient infrastructure, low labour market participation, inefficient education system and a difficult social situation, need for protection of the environment and natural resources and need for adapting to climate change and not the last, inefficient public governance at central and local level and weak involvement of partners.

An extensive academic research concerning clusters and networks (Pickernell, Rowe, Christie, & Brooksbank, 2007) created a framework for reviewing and monitoring different aspects of clusters and networks on an ongoing basis. From review of the literature the author generated nine basic elements, against which he posed eight basic cluster/network types. The data was based on three sets of key stakeholders (government, institutions and industry) using three examples of clusters in construction, hardwood timber and higher education sectors in Wales. The elements of the framework are: three as seen as external, structurally-related issues, direction (vertical/horizontal), formality (formal/informal) and reason, than six seen as more internal – returns, participant goals, participant conduct, participant basis, network system management and type of learning. The cluster typology includes: industrial complex, hub and spoke, Italianate district, Marshallian, urban hierarchy, social network, virtual organization and satellite industrial platform. The framework these researchers propose provides tools for reviewing and monitoring individual sectors also helping to ameliorate problems in sectors likely to decline further.

A relevant study case we identified in the scientific literature, about biotechnology clusters in the United Kingdom and Ireland, provides a contribution to a theory of clusters in the sector with special reference to those operating at the periphery and away from major and established centres with implications for public sector policy and theory of peripheral clusters (Kasabov, 2011). He identifies causes of delayed

and stunted development of the clusters - institutional support, a lack of networking, diverging perceptions and cognitive disagreement among major players in a cluster. In this study 'cluster difficulties' are considered in terms of the low density and low variety of formal and informal relations of the organizations and individuals and the lack of a variety of actors, activities, and resources and 'cluster periphery' is defined considering the geographical location of the cluster in relation to major successful clusters as well as its reputation. The conclusions of the paper suggest that early-stage cluster difficulties and periphery may be referable to the unsuccessful attempts to develop local, dense and varied networks and recommends stimulating links with national and world-class centres of excellence as well as professional bodies located far from the cluster. There are identified other inhibiting factors for peripheral clusters, such as absence of a cognitive community and absence of shared understandings of a common cluster identity, both among the members of the cluster and by players outside of the cluster such as the public sector, the private sector and the general public.

As far as cross-border collaboration among clusters, we found relevant examples of clusters in Austria (Altmann, 2014) that, through EU funded projects developed partnerships between clusters among plastic industry from different European countries. The first example is a project implemented between 2011-2012 with cluster partners from Austria, Italy, France, Germany and Switzerland that had as tasks and objectives to create a network of private or public actors involved in local development policies in 5 Alpine regions, promoting a public-private cooperation and create proper conditions for open and strategic innovation in the alpine plastics clusters and strengthen the related economic sector. The second example is a project implemented between 2012-2014, with cluster partners from France, Italy, Germany, United Kingdom, Austria, Spain and Portugal, having as tasks and objectives to link the clusters and their companies with more clusters and companies in the plastics industry and environmental engineering in the target markets of India, Brazil and the USA. The two examples show different approaches in going cross-border among clusters, either based on country proximity or common target markets.

A group of issues that affect the success and future development of clusters can include (Siil, 2014) trusted links between companies and research (including universities, research institutes and leading blue-chip innovators), increasing activities that stimulate cross-sectoral collaboration, by fostering demand driven innovation, business skills and risk-taking. In order to support these issues for good results the cluster management should do some step like setting cluster objectives and integrate members and stakeholders into joint strategy building

processes, raising funds in order to provide services, organizing collaborations within and outside the clusters and monitoring performance.

Clusters in Romania

In Romania the cluster is defined in the Government Decree 918/2006 for approving the Programme for stimulating research, development and innovation Impact and it is a group of producers, consumers and/or beneficiaries with aim of applying EU good practices for increasing the competitivity of companies. As specific for Romania and linked with the clusters there is another concept – 'competitivity pole' that is an association, in a well-defined location, of enterprises and research bodies or education institutes with research activities, having a partnership collaboration with a common development strategy, aiming to generate synergies among innovative projects oriented to one or more markets. The competitivity poles may include also public authorities, non-governmental organizations, regional development agencies, commerce chambers, business associations, training or consulting companies, banks, named as 'catalyzers' (POSCCE, 2011). Therefore, the difference between the two concepts, 'cluster' and 'competitivity poles' relies in the orientation of the latter toward national and international relations through participation to the unique market and international markets and through networking. As well, in the case of competitivity poles there is a strong innovative character and an assumed development strategy where the partners interests are gathered around coherent objectives with significant economic impact (Coşniță & Iorgulescu, 2013).

The theory issued the "triple helix' concept commonly used nowadays in researches about clusters (Ranga & Etzkowitz, 2013) that gathers in a cluster the representatives of enterprises – the economic side of the cluster, universities and research institutes – the suppliers of innovative solutions applicable to the real needs of the enterprises and local and regional public authorities. In Romania the cooperation experience between the three categories is not a successful one therefore it came the need to adapt the 'triple helix' model and to transform it into a 'four leaves clover', the fourth group included in clusters being represented by catalyzer organizations – consulting companies specialized in IT transfer and innovation, technologic transfer centers or similar (Coşniță & Iorgulescu, 2013). As the two authors detail, the roles of the four categories involved and their benefits are easy to detect: the enterprises should cooperate and contribute with the production capacity benefiting by increased added value and competitive advantage; the universities and research institutes are focused on updated and applicable researches, information, know-how transfer and the benefits are about curricula adaptation, new laboratories financed by the

industry, continue learning, research nuclei; public authorities should act as mediators, they disseminate the information to local and regional level and offer direct support benefiting by the local and regional economic development that the cluster activities bring; the consultants bring the know-how transfer and get added value or inclusion in the innovative network.

The clusters in Romania started spontaneously, bottom-up, from industrial agglomerations in some geographic areas, either based on a tradition or due to location of multinational companies (Coşniță & Iorgulescu, 2013). The intervention of some factors or catalyzers, regional development agencies, consulting companies or the frame of Frame Programme 7, moved them to a next level – clusters – competitivity poles. An important role in accelerating the development of clusters in Romania was played by the Ministry of Economy, Trade and Business. Until January 2014 in Romania there were officially registered, as legal entities, 47 clusters. From the total, 15 clusters are in start-up phase, 27 in development phase and 5 of them having been benchmarked to aquire the bronze label (RDA, 2014). It is relevant to consider the fields for the regions that have border with Ukraine: North-East Region - textile, tourism, IT, new media, creative industries, molecular imaging, biotechnology, North-West Region - IT, geothermal water, renewable energy, furniture, and South-East Region - ship building, textile, renewable energy.

A representative of a Romanian textile cluster (Stratila, 2014) situated in the North East region considers as opportunities and strengths - increased mutual trust among members the increased attractiveness of the cluster, increased notoriety and interest for such structures, consolidation of the trade system, increased capacity for training activities and management of projects funded by own resources or governmental and European resources. Despite the development level of the cluster, passed by the initial stage, the threats and weaknesses of it are linked to the market dynamic, the activity field and services, excessive bureaucracy and lack of support from local authorities, reluctancy toward the associative structures, freedom of circulation of the qualified personnel, weak attractiveness of the members in new cooperative forms for brand consolidation, weak visibility at national and international level, weak cooperation links with other actors from the North East region and weak participation to European projects.

Conclusions

Considering the references about the cluster situation in Romania and the Porter's remarks, the border area Romania-Ukraine, could be considered as a good starting potential to build network of clusters as long as in the regions that share this border where already clusters exist in various fields.

The objective of this paper, consisted in analysis of scientific literature and practice which is giving important guiding marks to build an operational tool for the potential of the cross-border network of clusters. We identified the main points that should be followed in investigation: potential competitive advantages through knowledge, relationship, motivation; existence of multiple linkages and synergies, across industries, institutions from both countries; innovation potential rising from existence of universities, research centers or innovation active enterprises; potential use of historical heritage that can be preserved and exploited in relation with tourism development, housing, environmental management; level of cooperation among enterprises, local and regional administrations, research institutions, business associations (as catalyzers), both, in each country and across the border; potential for inclusion of multinational enterprises; potential use of urban centers; level of support for enterprises from local and regional administration and potential scopes for going cross-border, proximity, common target markets or others.

Based on lessons from the selected examples we identified aspects of consistent potential for a cross-border networks of clusters, a future strategy that will include them containing tools for collective learning in the networks, for detecting and improving skills for management clusters and for strengthening the cooperation inside clusters and among them.

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