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Economic Clusters: Concepts and Characteristic Features

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ABSTRACT

The cluster concept is closely linked with the work of Michael Porter: about industrial clusters and then on regional clusters, where he describes in detail the close relationship between the cluster partnership and the competitiveness of firms and industries. Porter defines a cluster as “geographically concentrated groups of interconnected companies, specialized suppliers, service providers, firms in related industries, as well as related to their work organizations (e.g., universities, standards agencies, trade associations) in particular fields that compete, but also leading joint work”. The phenomenon of cluster as object of economic agglomeration of interrelated enterprises in certain territory, is known since craft production. But only since the last quarter of the XX century, industrial clusters have begun to show themselves as an important factor of economic development of regions. Among economists worldwide is increasingly acknowledged view that the regions on whose territory the rest of the clusters, become leaders of economic development. Such regions are leaders define the competitiveness of national economies. However, there is a need for more accurate conceptualization of what constitutes a cluster and related phenomena, to conduct research clusters and to draw conclusions for economic policy. With this purpose, this paper attempts to highlight the main characteristic of cluster characteristics, as well as to identify the pending issues.

JEL Classification: P25, P28, R1, R12.

Keywords: Economy, economic clusters, management, cluster management, clusters.

1. INTRODUCTION

There are many types and definitions of clusters differ in size, orientation, but in General the essence of a single cluster: a cluster is a group of geographically localized interconnected companies, suppliers of equipment, components, specialized services, infrastructure, research institutes, universities and other organizations complementary to each other and reinforcing the competitive advantages of individual companies and the cluster as a whole. The interaction of the enterprises and organizations participating in the cluster is a combination of cooperation and competition, i.e. there is a constant exchange of personnel, innovation, technology, is infrastructure sharing, services, and advertising and marketing promotion.

Basis of research is the system analysis.

While working on the study material used the scientific literature of domestic and foreign authors on problems of management of economic clusters, periodicals, relevant data of the statistical committees.

2. DISCUSSION

In most cases, the industries included in the clusters are grouped based on the extent of intersectoral flows of products and knowledge, and include:

- technology flows due to the purchase of products and intermediate goods in other industries, as well as the interaction between their producers and users;
- technical cooperation, as expressed in patenting, development of patents, the use of scientific results in several related industries, as well as in joint research projects;
- staff mobility between the segments of the cluster to disseminate the best achievements control.

Business benefits from the development of the cluster as a whole are improving efficiency and reducing costs in current operations and the development of the markets, increasing the flexibility and innovative potential in the creation of new products, technologies.

Enterprises benefit from cluster membership by:

- improve the effectiveness of the system of supply of raw materials, components and accessories, the successful use of subcontracting;
- the availability and quality of specialized service
- access various financial resources (e.g., sources of venture financing for new technology companies in the information technology cluster);
- the availability and quality of opportunities to conduct research and development;
- availability of specialized and productive human resources;
- network building formal and informal relationship, for transfer of market and technological information, knowledge and experience;
- create a system to identify the collective benefits and dangers of forming a General vision and productive strategy of development of the cluster;
- create a system of relationships between the business power.

A typical cluster consists of small and medium size, each of which does not receive significant gains from competition with another member of the cluster company (as opposed to multiple groups of companies in oligopolistic markets). At the same time, companies in the cluster benefit from the compact arrangement, associated with the use of specialized resources (available at this site qualified personnel and specific infrastructure required for the implementation of this business). The successful development of clusters involves mass production, usually oriented to the world market. In this sense, the development of clusters requires a significant integration of the territory in the broader economic space.

Types of Clusters

There are many classifications of clusters based on different features. In my work focused on two of them, seemed to us the most meaningful and profound.

The first of these classifications is the selection of two major categories of clusters formed in the spatial and functional axes: a functionally-linked system, which are less strictly limited to certain regions usually belong to industrial clusters, while spatial grouping of similar and related firms and industries relate to regional clusters.

Industrial cluster focuses on competitiveness inside the sector. It consists of various actors, resources and activities that unite together for the development, production and sales of various types of goods and services. Industrial cluster, as a rule, the spatial is not attached to any urbanized area. In contrast, regional cluster, it has the tendency to have a wider border, perhaps covering the entire region or country.

Regional cluster is a spatial agglomeration of similar and related economic activity that forms the basis of a local environment conducive to the play of knowledge and stimulate various forms of learning and adaptation. Such clusters usually consist of small and medium enterprises, and the Central element of their success is centered in the strength of social capital and geographical proximity. Their other feature is that firms are less interconnected than in the industrial clusters.

In his article, Clusters: concept conditions of formation and functioning of the K.Z. Adam divided the clusters into the following types (Crouch, 2001):

1. “Mesalliance” clusters – clusters in which small firms in the same industry use the economies of scale through the joint (due to compact layout) use of shared resources. Typical of the footwear industry in Italy, garment production Turkey, India. Currently implementing a program to build such an agri-food cluster in Georgia.
2. “Hub and spoke” (hub-and-spoke) or “radial” clusters. Such clusters are built large Assembly plants of the automotive and electronic industries (such as in Detroit or Northern Italy). The key feature of such clusters is that a large firm (one or more) performs the role of center, root business for the regional economy. While relationships between center and the other components of the cluster can be stiff, and weak. Communications are generally of a hierarchical nature, with the expression of a dominant center. The basis of the mechanism of the existence of such clusters is the use of subcontracting and outsourcing.
3. “Satellite” cluster is a set of companies focused on the supply of goods, works and services to the enterprise, external to the cluster. This type of clusters often occurs as a result of successful

policy of attracting in the region of foreign investment (movement of production components). Firms in such clusters are relatively independent from the other manufacturers in the same process chain and from competitors in the region. At the same time, competition between the “satellites” are limited, including because they often produce different types of products.

4. “Chained to the state” cluster – the cluster in which economic activity in the region is tied to the state enterprise, such as a military base, defense plant, a University or government body associated with the state (defense) order.

Five Main Theoretical Concepts that Support the Cluster Concept

One of the most comprehensive and structured approaches is the point of view of Bergman and Feser, - reported in “Industrial and regional clusters”, published in 1999 (Bergman & Feser, 1999), the Authors identify five main theoretical concepts that support and supply cluster theory:

1. external economy;
2. innovative work environment;
3. cooperative competition;
4. inter-firm competition;
5. the dependence of the path.

External Economies

Two basic conceptual approach to understanding the benefits of concentration dominate the literature: the theory of industrial localization, where benefits are referred to as agglomerative economies and Marshall view, where the starting point is taken the analysis of external scale economies and their presence in the industrial areas (Steiner, 1998).

To benefits arising from the theory of industrial localization include: increased market power-brokering deals, the best use of equipment, common infrastructure, reduction of risk and uncertainty, more knowledge.

Marshall defined external economies of scale as cost savings, accrue to the firm because of size or growth of output in the whole industry. Such external economies contrast directly with internal scale economies, which are a source of increased profit from the growth of the volume of production. These external economies are essentially spatial externalities (side-effects of proximity between economic units). Here, the key role of learning, innovation, increased specialization, specific knowledge and skills.

Innovative Work Environment

Innovative work environment – this theory also identifies two concepts: learning economies and innovation environment (innovative milieu).

The advantages of studying economies can be attributed to the exchange of knowledge and information, mutual learning. Special attention is paid to “tacit” knowledge, skills, institutions, firms, people (Roelandt & Den Hertog, 1999).

Innovation environment characterized by the specific nature of the deals, alliances and partnerships between enterprises. But more emphasis is placed on maintaining collective innovation environment, rather than on bilateral ties (Groen, 2012).

Cooperative Competition

Cooperative competition is the way in which small and medium sized enterprises oppose the external economy of scale used by large enterprises.

Lobbying, foreign market research, joint export promotion, trade fairs and specialized investment in infrastructure is a typical area where competing manufacturers can collaborate.

On the other hand, they can compete in the areas of marketing, production, sales, and production of new products and process improvements (Shkurkin, Ryazantsev, Gusakov, Andronova, & Bolgova, 2016). This view contrasts with the literature on industrial districts, where focuses particular attention on cooperation in production (especially on collective efforts to solve joint production problems).

It is very important to many sociological researches of separate industrial areas which not only identifier main economic trends in the agglomerations of small firms, but also social and cultural behavioral codes that govern relationships between firms in these dynamic regions (Le Heron & Harrington, 2005). The study “social nesting” of economic transactions contains the attempt to explain the institutional factors mentioned by Porter, is a fundamental contribution to the literature on new industrial districts (Porter, 1998).

Inter-firm Competition

It would seem that inter-firm competition Porter’s study contradicts the view that clusters are filled with the spirit of cooperative competition. He adapts the traditional neoclassical view, arguing that a competitive industry structure – i.e., the number of companies competing on the same playing field – ensures a constant pressure to improve technology, cost minimization, innovation (Porter, 1998). But a simple index of industry concentration does not show adequately the level of competition in the industry or region. More important is the competitive nature of the industry itself. It is also likely that the competition will be stronger among competing firms are geographically concentrated in separate areas. Firms within the region are fighting not only for consumers but also for labor, capital, public and political support.

Chinitz criticizing the literature on agglomerative economy, focusing on the size of cities and industries (Latham, 1976), shows that the sectoral structure particularly influences learning, innovation and entrepreneurship, giving a diversified and rich in small firms in places like New York the advantage over the cities in large enterprises, a single industry, like Pittsburgh.

Dependency of Path

Neoclassical theory of regional growth, which is the main view of regional growth over the 1980s, argues that natural market mechanisms to gradually eliminate interregional economic inequality, never taking any role for externalities (Bogoviz, Ragulina & Kutukova, 2016). New growth theory assumes that comparative advantage established in the region or country, perhaps by chance, luck, distribution of natural resources or other not behavioral phenomena probably enhanced as the result of external economies of scale. Path

dependence refers to the overall position that technological election, even inefficient, bad or suboptimal, unable to dominate the alternatives and to be self-reinforcing.

Andersson Approaches to Understanding Clustering

Overall, Andersson through analysis of works devoted to clusters, there are the following characteristic of the clusters, the key elements commonly found in the literature (Andersson, 2004):

1. geographic concentration;
2. specialization;
3. multitude of actors;
4. competition and co-operation;
5. critical mass;
6. life cycle of the cluster;
7. innovation.

Focus on them more.

Geographic concentration.

Geographical concentration has been Central cluster idea from the outset. Even despite the fact that some approaches have tried to disprove the importance of physical agglomeration, there are equally important “hard” and “soft” aspects in explaining why geographical proximity remains the core of the cluster concept.

The “hard” aspects, some of which were identified already by Marshall, associated with benefits derived by firms from co-locating in certain areas (Centonze, 2010):

- specific natural resources or other unique local assets become more widely available.
- geographical proximity provides opportunities for lowering transaction costs especially in the organization of access to knowledge and its transfer;
- economies of scale and scope (economies of scale and scope) in a given area can be optimized by a limited number of enterprises effective size;
- specialty suppliers in the factor markets, relative labor, capital, or technological resources can be facilitated within an individual region;
- tools for accessing and sharing information on market or technological changes can become more effective within this area;
- interaction with local users generates learning and more sophisticated demand.

For these reasons, firms may feel that they belong to the series of interlinked companies in the region can serve to increase efficiency, maintain productivity growth and to create innovation, especially due to better access to knowledge, ideas and production skills.

The physical concentration of businesses can develop simultaneously with the growth locally of specialized labor markets. Clustering can promote specialization and increase the division of labor in the region, providing the opportunity for individual firms to combine the advantages of flexibility, which result from the small scale at the firm level with economies of scale and boundaries at the cluster level.

There are equally important “soft” aspects related to the location in the social capital. For example, geographical proximity between firms and research institutes facilitates the informal exchange of not codable “tacit” knowledge and its accumulation. Thus, social capital can be particularly beneficial for maintaining joint efforts, but also may lead to lack of mobility, with the exception of the changes and counter them.

Specialization or Common Denominator of the Clusters

Any cluster is traditionally viewed as specialized in the sense that the involved parties are connected together via a core activity, which focuses on the same market or process. However, various studies have found that clusters mostly have a limited number of transactions among firms within the cluster, that is, in the form of relations of the seller-the buyer, and attention gradually shifted to the value of spillovers of knowledge and related aspects. Individuals in the same or related fields have a tendency to share the experience with others, formally through professional communication and informally through various informal exchanges. Continuous multidimensional interaction in similar but complementary activities, explains the process of mutual learning, experimentation and innovation.

But the cluster may go beyond relations within a single sector. They may cover various sectors and industries. In fact, clustering between traditional sector boundaries can be an important source of innovation and future competitiveness.

Thus, the pattern of specialization is not necessarily limited to any specific sector. Clusters can develop in mixed directions when subjected to internal or external influences. The interlinked specialized suppliers and qualified customers strengthen the cluster’s competitiveness in global markets.

Actors Clusters

Firms shape the nature and obvious components of clusters. However, clustering implies variety, rather than a single company. In the absence of such diversity, each of the observed agglomeration is likely composed of expanded enterprises, where other companies or units can only serve as subcontractors or clients in relation to the main organization. Similarly, the group included as a branch of the firms controlled through formal cross-ownership are not independent and are normally subject to their own costs and benefits.

These differences are not trivial. The motivation to reduce transaction costs and contradictions, for example, the transfer of knowledge between the individual firm and other actors, can serve as a good reason of common control activities and, consequently, the formation of a single organization. Meanwhile, on the basis of cultural devices, the differences between separate, independent units and those firms which are associated less formal or planned relationships, can be barely noticeable.

The recent mapping of the clusters showed that they mainly include a large number of small and medium size. Not only firms are significant actors. Clusters can enclose the intense alliances with various institutions such as universities, research institutes, public authorities, consumer organizations, etc. Four main categories of actors as essential, and, usually present in the cluster:

- of the company;
- government;
- research Association;
- financial institutions.

For cluster initiatives are also important so-called institutions of cooperation. They can contribute to the establishment of completely new structures and involve numerous organizations, but can also represent a number of already established actors such as chamber of Commerce, industrial and professional associations, trade unions, organizations for the transfer of technology and others (Bolnokin et. al., 2016). The various actors involved in cluster initiatives in various ways and incentives. Their capabilities and roles can vary depending on the national context and the period of the life cycle of the cluster.

When the cluster concept was first introduced, the attention of policymakers, practitioners and researchers of the cluster were concentrated in firms. However, as attention gradually shifted to issues that may arise during the separation of knowledge and skills, developed a systematic approach that emphasizes the interaction and interdependence of the various parties involved. For example, more attention was paid to the role of universities. Universities are important not only because of their natural mission in education and research, but also because of their ability to serve as hubs for entrepreneurship, research and industrial interaction.

Cluster Dynamics and Linkages: Competition and Cooperation

Typically, as firms and individuals compete with each other, there is a tendency to improvement. Depending on market characteristics, actors may seek to gain advantage by reducing costs or prices, raising quality, acquiring new customers or penetrating new markets.

At the same time operating at one level the participants in the cluster may cooperate around a core activity, using their key skills to complement each other (Hong, Oxley, McCann, & Le, 2016). By acting together, firms are also able to attract resources and services that would be unavailable to them in isolation. Sharing resources and risks, developing complementary functions, firms achieve economies of scale. Clusters tend to have a shared identity in relation to the external world and specific way of functioning within themselves.

The Central aspect concerns the desire of individuals to participate in the exchange of information and flows of knowledge (including technology, management and marketing). Trust and recognition are important in business collaboration when companies interpreted, assess and act on information. Data that is encoded, but in which there are no nicotinamide elements, transmit only part of the information is part of the reason why information and communication technologies reduce the importance of geographically concentrated clusters (Strielkowski & Höschle, 2015). You should take into account that the separation some knowledge about the behavior of partners, their values and strategic choices can expand the range of possibilities, but it can also bring costs and risks, especially when information is used incorrectly.

Life Cycle Managing of the Cluster

Any cluster goes through a number of stages. They may not be identical, and the rate of their development can vary. However, there is the internal logic of the way in which clusters develop, which makes it possible

to distinguish some characteristic of the model. Even though the precise shape and direction will depend on the specific circumstances, the cluster goes through the following life cycle stages:

1. **Agglomeration:** In the region, there are a number of companies and other actors.
2. **Emerging cluster:** Some participants in the agglomeration start to cooperate around a core activity and realize common opportunities through their linkage.
3. **The developing cluster:** Since arise or involve new participants in the same or related activities in the region, new relationships emerge between these new actors. Can appear formal and informal institutions sustain cooperation. Often begin to have names, websites, General content related to the region and activity.
4. **A mature cluster:** A mature cluster has reached a certain critical mass of actors. He has also developed ties beyond its borders, to other clusters, activities, regions. There is an internal dynamic of the creation of new firms through their formation of a joint venture by the Department.
5. **Transformation:** Over time, markets, technologies and processes change, as well as clusters. For a cluster to survive, be sustainable, avoid stagnation and decay, it is necessary to produce innovations and to adapt to changes. It can choose the form of transformation into one or several new clusters that focus around other activities or simply to change the ways in which supplied products and services.

3. CONCLUSIONS

Thus, the cluster “spatially concentrated critical mass of specialized, numerous actors involved in the combined competition and cooperation”.

Common features of clusters may have limited applicability in individual cases. In fact, clusters are unique in character. Not all the elements mentioned above can be represented, or even desirable, in the individual case. Some elements may be more meaningful under certain circumstances, and the relationship between them may change. On the other hand, it would be premature to argue that missing elements are not important for the functioning of each individual cluster.

Although the definitional and conceptual elasticity of the cluster concept can be regarded as a positive force that allows you to include a wide range of cases and interpretations, it is quite problematic. This concept has acquired such a variety of uses, connotations and meanings that it in many respects became a “chaotic concept”, in the sense of connection and equating quite different types, processes and spatial scales of economic localization under a single, comprehensive and universal concept.

The main source of ambiguity – determination. Since the definition of Porter are so vague in terms of geographical scale and internal socio-economic dynamics, this has allowed different analysts use the idea in different ways to meet their own goals.

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