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CLUSTERS IN THE THEORY AND PRACTICE OF LOCAL AND REGIONAL POLICY

1. Introduction

The notion of clusters, as a tool of the local and regional development policy in Poland is a completely new one in our economic reality: it is only recently that it has raised considerable interest on the part of both economic theory and practice. In order that clusters could provide an effective tool of policy that serves the purpose of development and increase the level of competitiveness of the economy, it is indispensable to provide a precise definition of the term.

However, defining it is far from an easy task, yet indispensable as regards cognitive procedures exerting a strong influence on the quality of scientific knowledge created by researchers of a given phenomenon. Moreover, defining is particularly important if its goal is a description or analysis of a given phenomenon since precision in doing so facilitates establishing a proper scope of research and helps exclude from it immaterial features or elements.

In recent years, the literature of the subject has devoted a lot of space to the role and significance of clusters in raising the effectiveness and competitiveness of local and regional economy, as well as that on the macro scale. Also, the cluster has more and more often been indicated as a new form of functioning of small and medium-sized enterprises. The concept of clusters and the policy of development based on them has been introduced by the majority of the OECD member-states. Accordingly, in 2002, in Poland, the Institute of Research into Market Economy began realization of a research project with the aim to examine and determine possibilities and ways of making use of the concept of clusters in raising competitiveness and innovativeness of the Polish economy. For the needs of the project the following was accepted as the definition of a cluster:

A cluster is a geographical concentration of mutually dependent economic subjects and other institutions complementary to the former. Thus, a cluster is a supra-branch network of formal and non-formal connections between producers, their suppliers, receivers, institutions operating within the sector of science and technology, a network that accepts common technological, organizational, innovative trajectories, common manufacture factors or sales markets. Apart from this definition, there function – in the literature of the subject – a few other definitions of the cluster. This results from the existence of many theoretical concepts, which are more or less convergent with the concept of the cluster, and also with the occurrence of a number of notions relating to the same object, that is the cluster.

In the Polish literature, beside the term “cluster”, there appear also, interchangeably, ones such as: “group”, “industrial cluster”, “local production systems”, “innovating networks”, “industrial district”, “regional innovating system”.

The aim of the present paper is to offer a review of the definitions of the cluster and their essence, as well as characteristic features occurring in most of the definitions. It is also of interest here what place the cluster occupies in the local and regional policy of the state at present.

2. The notion, the essence and features of the cluster

The word “cluster” derives from the English language, meaning a group of similar things (objects) remaining or grouped close to one another. In the economic literature, the term cluster has functioned for a relatively short time. It was used for the first time in the works by Michael E. Porter, from where it found its way into the Polish terminology related to management in the translated form of “*klastra*” or “*grono*” [Grycuk, 2003].

According to Porter, development of an enterprise is dependent on the environment in which it is functioning, its development being stimulated by elements of the close and distant surrounding with which the enterprise enters into mutual connections by means of vertical ties (suppliers and receivers cooperating in the chain of values) and horizontal ones (common customers, technologies, distribution channels). The first type of relations is typical of phenomena of cooperation; the latter – of competition. A certain group of enterprises which cooperate with one another but – at the same time – compete against one another, can be connected with one another and with the environment. Specialization and diffusion of knowledge within the given group allow the enterprises to obtain certain cost- and quality-related advantage, which – in consequence – leads to an increase in the demand for products manufactured by this group of enterprises. On the other hand, competition, rivalry,

force these companies to maintain high standards of activity, stimulates innovativeness, while the geographical nearness makes them look for sources of competitive advantage that are more sophisticated than the traditional cost-related factors [Grycuk, 2003]. Furthermore, strong competition prepares enterprises to compete successfully in the global market in a very good way. In Porter's opinion, it is clusters or groups and networks of suppliers that will compete in the 21st century, not single individual companies [Romanowska, Trocki, 2002].

Thus, according to Porter's definition, a cluster is a geographical concentration of mutually linked firms, specializing suppliers, units providing services, firms dealing in related sectors and institutions connected with them (*e.g.* universities, normalization centers, branch associations), competing against one another but also cooperating in individual domains. In Porter's opinion, clusters are a phenomenon that decisively influences competitiveness of the industry, and acting within a cluster yields substantial economic profits to all enterprises.

Reaching for publications dealing with the problem area, one can find out that there are a number of definitions of the cluster, and there is not one that would be popularly applied and accepted. Consequently, the literature of the subject offers the following definitions:

1. According to Hertog, a cluster is a group of firms, their suppliers, customers and centers of knowledge (centers of higher education, research institutes, consulting companies) possessing complementary competences and participating in one chain of creating value, whose goals of activity can be improvement of the quality of processes and final goods. They can form network connections between one another, which facilitates diffusion of innovation and joint development of new technologies [Hertog, 2001].

2. In turn, the World Bank associates clusters with manufacturing networks consisting of inter-dependent firms and their specializing suppliers, centers of knowledge, (universities, research institutes), supporting organizations (intermediaries, consultants) and their customers [World Bank, 2002].

3. One of the simpler definitions treats the cluster as a group of enterprises based in a differentiated geographical area [Swann and Prevezer, 1996].

4. A cluster is a geographical concentration of firms active in related sectors, which cooperate or are connected with one another in another way or provide complementary services to one another and make use of the same infrastructure, as well as of specializing suppliers; they are active in the same (local) labor market encountering similar chances and threats [Rosenfeld, 2001].

5. A cluster is a group of organizations dealing in related sectors, which are connected with one another [Scottish Enterprise, 1999]

6. A cluster is a geographical concentration of firms, among which there exist vertical and horizontal relations, cooperating and competing with one another

in a given segment of the market, availing themselves of the same local infrastructure and also accepting a common vision as regards the directions of further development of the branch and region [Cooke, 2002].

7. A cluster is a group of spatially concentrated, interdependent enterprises and institutions that cooperate and compete with one another, and which jointly form a system of ties of market and outside-the-market connections [UK Department of Trade and Industry, 2001].

8. A cluster is a sector-based and geographical concentration of firms, which – due to their specializing suppliers, availability of sources and components, as well as the local labor market – obtain benefits of agglomeration; they are supported by a network of institutions in the private and public sectors that promote collective learning and the process of innovations diffusion [UNIDO, 1999].

9. A cluster is composed of four elements as follows: geographical concentration of specializing firms (primarily small and medium-sized) in related sectors, a system of connections between enterprises, which is based on market and outside-the-market exchange of goods and information, a sense of certain community which is evident in a cluster-typical behavior, and a network of public and private institutions supporting activities of the other members of the cluster [Rabelotti, 1995].

The researchers dealing with the problem of clusters in the Polish literature of the subject also undertake issues of conceptual nature. Among the publications concerning clusters, which appeared in recent years, one can find A. Grycuk's suggestions, according to which a cluster, or – in other words, a group – is a geographical concentration of firms dealing in related sectors, their suppliers and other organizations (branch associations, as well as centers of knowledge such as colleges of higher education and scientific-research centers) which cooperate with one another in a production process and in the chain of creating value, between which there exist network links and for whom membership in a group can be a vital factor that influences their individual competitiveness. In turn, T. Brodzicki [Brodzicki and Szultka, 2002] defines the cluster in *sensu largo* as spatial competitiveness of enterprises, institutions and organizations, which are mutually connected with a network of relations of formal and informal character, and which are based on a common trajectory of development (technological, common target markets, etc.); the participants of the cluster compete and cooperate in certain areas of activity at the same time. E. Wojnicka, on the other hand, treats clusters as innovation systems founded mainly on a transfer of knowledge, at the foundations of which there are direct contacts between people. For this type of transfer of knowledge to function properly geographical closeness is very important. Hence, in comparison with regional and national innovation systems, the intensity of knowledge diffusion through mobility of employees is the highest in clusters. The author

underlines, at the same time, that in analyses of clusters understood in this way, institutional aspects are paid less attention to, while enterprises and their innovativeness are of more importance. Enterprises' innovativeness can be supported in the most effective way by the local and regional authorities, who can establish such institutions as "incubators" of business activity, technological parks, or guaranteed funds. The dialogue between industry, science and public authorities, whose collaboration is extremely significant in inducing innovation activity, can also work most effectively on the local level.

Recapitulating, it can be claimed, independent of the fact whether we come to deal with nationwide, regional or local innovation systems, that an innovation system, treated as a cluster, is a complex of institutions and connections linking them. Thanks to them the given economy makes an effective mechanism of generating and diffusing knowledge. Obviously, beside the institutions generating knowledge and innovation, such as enterprises, the scientific-research sphere and institutions that mediate in the transfer of innovations, various interactions occurring between them are also significant here. There are four forms of relations in the innovation system which are most frequently indicated [Wojnicka, Rot, Tamowicz, Brodzicki, 2001]. They are as follows:

- relation enterprise-enterprise, including ties with commercial knowledge-consuming services provided for business (*e.g.* joint activity in the field of R&D, common products, patents);
- relation enterprise-sphere of science and research and public institutions of transfer of technologies (joint R&D activity);
- market transfer of technologies, that is diffusion of knowledge and innovation through purchase of machinery and installations, as well as licenses (indirect expenditure on R&D);
- mobility of employees and transfer of covert knowledge, unassociated (transfer of innovation by means of employees).

M. Jagiełło [2002] defines the economic cluster as a network of enterprises which are strongly mutually dependent on one another (including specializing suppliers) and tied to one another in a chain of creating value added. The author stresses that in some cases clusters include strategic alliances with universities, research institutes, highly specializing services providers, consultants and customers. A cluster is usually a network of a cross-like character, *i.e.* covers various sectors and/or side-branches. It concentrates in itself different firms, which are complementary and specialize in creating the given chain of values.

A slightly different approach is presented by M. Romanowska and M. Trocki, who place the concept of the cluster within the current of searching for a collaborating enterprise. They underline the fact that, in the concept of clusters, cooperation of enterprises concerns not only direct competitors dealing in the same branch and in the same region, their cooperators and customers, repre-

representatives of related branches, but also organizations connected with science, administration and broadly understood business environment. The motive that is crucial in deciding which members of the cluster will collaborate, is, primarily, interests and – understood in a specific way – regional and national patriotism [2002]. The authors of the above-presented definition, similarly to many others who are concerned with the problem of clusters, point to strategic alliances of clusters with scientific-research organizations and business environment. Enterprises belonging to a cluster do not only collaborate with one another, but also with all the elements of the environment. Cooperation and, at the same time – functioning – of the cluster is based on mutual trust, which is a vital element here: functioning of clusters is not regulated by any agreements or legal regulations after all.

As it follows from the above, both in the literature of the subject and in the economic practice, there exist a number of definitions of the cluster. This results, primarily, from the complexity and multidimensional nature of the object being defined, but also from the fact that research into clusters can be carried out for different purposes. It is not without importance here that there are numerous limitations and methodological inconveniences, as well as the quality of the data available for analysis and applied research methods. Moreover, defining the cluster, additionally complicates the existence of many theoretical concepts which – to a greater or lesser extent – are convergent with the concept of the cluster, such as: industrial district, regional system of innovations, innovation network and the like.

Analyzing the contents of the above-presented definitions, it can be concluded that a cluster is nothing else but a manner of connecting companies, institutions, organizations and communities that are active within one domain. Internal competition, cooperation, quick exchange of information, mutual support, mutual enterprises cause clusters to be perceived as a modern method of economic development. The presented definitions of the cluster allow pointing to features characteristic of this form of functioning of enterprises. The features are included in Table 1 below.

Clusters constitute a certain new specific form of spatial organization of sectors of industry and services, which is gaining more and more popularity in Poland. This organization is focused on ties and dependences among the participants of production network, manufacturing products, providing services and creating innovations. The basic feature of the cluster is a network of connections between subjects acting in a given geographical area, and – most frequently – in a given branch, or one of enterprises dealing in one dominating branch plus companies from related branches. A network of connections, as a rule, forms spontaneously when there appears an economic interest of collaboration. The basic principle behind formation of the cluster is collaboration for the sake of common good. Thus, a cluster is a network of economically

Table 1. Features of clusters

| Features | Characteristics |
|--|--|
| 1. Geographical concentration (spatial) | Nearness favors spreading of innovation, cooperation, making and maintaining contacts between partners. |
| 2. Sector-based concentration | Clusters appear practically in all sectors of industry. They occur both in industry and services, in high-technology and traditional sectors. They are characterized by a different level of innovativeness and technological advancement, which means different strategies and prospects of development. Enterprises forming a cluster usually come from one or several related sectors |
| 3. Competition and cooperation (collaboration) | Enterprises concentrated in a cluster simultaneously compete and cooperate with one another. Aiming at lowering of the costs and increasing effectiveness of activity, enterprises concentrated in a cluster undertake to co-act with competitors (co-petition). Defending themselves against a loss of identity, position in the market and competitor's advantage, they start collaborating even with the biggest rivals. Enterprises aim to collaborate with all participants in the market, including competitors. It is believed that understanding and collaboration bring benefits to all partners. Enterprises that form a cluster most often have one "common enemy", realize a certain joint project, have a common goal to achieve. A characteristic feature of the cluster is ability to generate and maintain competitor's advantage. |
| 4. Interactive nature-connections | There follow dynamic interactions between participants of the cluster, whose quality and intensity determine the economic success of the cluster. An important element here can be a sense of regional communion and a common vision of functioning of the cluster. Interactions shape formation of connections and that leads to formation of networks, which – in turn – generates synergy. The effect of synergy favors raising competitiveness of enterprises in the region, as well as shaping of business activity in the region. |
| 5. Common trajectory of development | Apart from geographical closeness and concentration of subjects, a feature of cardinal importance for the cluster is acting on the basis of a common trajectory, e.g. a basis of knowledge or technology. |
| 6. Specialization | It is a characteristic feature that there is a large group of specializing firms and organizations present, which favors raising effectiveness of organization's activity, strengthening – at the same time – the need to collaborate and build a network of cooperation-based connections. |

Source: author's own elaboration

linked companies that have a good reason to collaborate with one another. Cooperation enforces defining a common goal that enterprises concentrating in a cluster want to achieve. Indeed, a condition behind functioning of the cluster is always a drive towards attaining a common goal, which can, for instance, concern as follows:

among others, dominance of small and medium-sized companies, a strong element of specializing and strong rivalry with a system of network connections based – primarily – on trust, at the same time; occurrence of these factors facilitates flexible specializing, high productivity and creates substantial innovation potential;

2. “Hub-and-spoke” cluster characterized by co-existence, in a given area, of large enterprises connected hierarchically with an extensive group of firms in the sector of small and medium-sized companies (e.g. Toyota City); clusters of this type base, to a great extent, on the power of great cooperation; at the same time, it is flexible in its activity and makes use of cost-related advantage;

3. Satellite-like cluster with a dominant share of small and medium-sized companies dependent on external firms, whose advantage stems, as a rule, from lower costs [Brodzki, Szulka, 2002].

Small and medium-sized companies, acting independently, have limited possibilities and therefore decide to cooperate in certain aspects, choosing one of the above-mentioned forms.

As it follows from the experience of countries, where the above-presented forms have had a tradition of operating, an effectively functioning cluster significantly influences improvement of economic situation and makes for a vital factor supporting innovativeness of the environment (spatial closeness of economic subjects stimulates and supports innovativeness); moreover, it activates export and attracts foreign investors. Clusters, thanks to their flexibility, can achieve high effectiveness in winning more and more new sales markets and maintaining the ones in which they already operate; they are able to quickly change their profiles of activity and adjust to the needs of new markets. Formation of clusters results also in a dynamic increase in the number of new companies, which leads to creation of new workplaces. Here, it can be said, too, about external effects such as: a rise in accessibility of specialist services surrounding business, investments in the infrastructure, increase in incomes of households, regional development.

4. Conclusions

The review of the problem area related to clusters presented in this paper proves only too clearly that clusters ought to be subject to thorough analyses and formulation of conclusions on the part of the economic policy of the state, and that not only on the level of treating economy on the macro scale, but also on the regional one. If we want to secure a stable increase in economy and create favorable conditions or sustainable regional development, it is indispensable to support the spirit of business activity on the local level. The authorities of the local level, wanting to effectively and rationally make use

of the economic potential, ought to search for solutions just in developing, or more properly – facilitating development of this form of functioning of enterprises. It is generally believed that it is clusters which support collaboration of entrepreneurs and local institutions, cooperation on both local and central administration level, coordination between different sectors of the state's policy that are capable of imparting dynamism to development of local economies. Therefore, it seems purposeful to include the model of clusters in creating and implementing the policy of local and regional development. The policy of regional development should make use of the concept of clusters while building up local and regional potentials. The concept of clusters will allow strengthening the regional institutional system and – consequently – will permit to more effectively manage the EU funds, as well as to implement independent regional programs adjusted to the actual needs of local communities.

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