THE COOPERATION OF BUSINESSES – CLUSTERS AS SUPPORT FOR COMPETITIVENESS

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Abstract: *Clusters affect competitiveness within countries as well as across national borders. Therefore, they lead to new agendas for all business executives—not just those who compete globally. More broadly, clusters represent a new way of thinking about location, challenging much of the conventional wisdom about how companies should be configured, how institutions such as universities can contribute to competitive success, and how governments can promote economic development and prosperity.*

Keywords: Globalization, OECD, quality, competitiveness.

1 INTRODUCTION

Competitiveness is becoming in the current globalized world one of the most monitored characteristics of both national economies and the private sphere. Competitiveness is associated with the development of globalization processes in the world economy and is linked with the growth of competition between individual nations. The definition of the concept of competitiveness differs in the economic literature. Although no unified definition of this concept exists, it is possible to trace several angles of view for this term. Links exist between international competitiveness and economic growth, or the standard of living of citizens.

The current approach to regional development competitiveness comes from the fact that if a given region is to be successful, the companies working in it must be successful, namely on a market larger than their domestic market. In principle competition can be evaluated based on two factors: productivity and employment. Gross domestic product, one of the basic indicators of economic activity, can be divided into three components. If Gross domestic product per employed person expresses productivity, the number of employed to the number of economically active citizens expresses employment, and the number of economically active citizens to the number of citizens could here be considered as a constant. If we acknowledge the relationship between the first two components, then increasing productivity leads to the creation of new jobs and higher employment.

2 COMPETITIVENESS IN A GLOBALIZED WORLD

The Organization for Economic Cooperation and Development (OECD) starts with a comparison of competitiveness from productivity in a given country, the amount of which may be influenced by capital amenities, the education of workers and also insufficient efficiency of production. The level of total productivity then plays an important role for the standard of living of residents, because the only determinant is the income in a society. The OECD's definition of competitiveness is defined on this basis as the ability of corporations, sectors, regions, nations and national units to generate a high level of incomes from production factors as well as a relatively high level of their use, namely under the conditions when by means of produced goods and services they survive in a test of international competition on markets, where there are conditions of free trade and equal market conditions [1].

The multicriteral evaluation which the World Economic Forum analyzes and publishes and has a significant impact on a successful competitive position is in the scope of individual groups divided into 12 pillars and contains both measurable indicators and non-measurable indicators determined by questionnaires [5]:

- Institutional framework.
- Infrastructure.
- Macroeconomic stability.
- Quality of health and basic education of residents.
- Higher degree of education and a system of additional education.
- Efficiency of the goods market.
- Efficiency of the labour market.
- Advancement of the financial market.
- Technological preparedness (to receive and use new technologies).
- Size of the domestic and foreign market.
- Advancement of the business sector.
- Innovation.

Regional competitiveness, according to a survey of the company Berman Group (2006), has five main factors:

- Human resources.
- Research and development, innovation.

- Economic structure.
- Direct foreign investments.
- Transport and telecommunications infrastructure.

3   COMPETITIVENESS AND CLUSTERS

Significant theoretical foundation for research of competitiveness introduced Michael E. Porter (1990). In his approach, for understanding competitiveness it is very important to know the source of that competitiveness. He recommended measuring competitiveness through productivity, because this enables growth of the standard of living and wages and has an impact on exchange rates, return on capital and the like. The aim of policies based on this approach is high tempo economic growth, growth in the incomes of citizens, a high measure of use of production factors, and primarily of human capital. Attention is devoted to the development of regions, for example, with the help of cluster initiatives. The survival of businesses in the current world is dictated by ensuring their ability to react and adapt to changes that occur in the real environment.

The development of information and communications technology (ICT) and the rapid development of technology and innovation provide the prerequisite for the creation of different forms of cooperation and partnerships for a business. The competitiveness of a subject is determined by productivity, how it uses its human, capital and natural resources. This represents technological improvements, innovation, the ensuring of better quality education, motivation as well as the organization of work. The existence of cooperation, for example in the form of clusters, is at the same time objectively given by a new way of organizing production. Clusters may include sectors of the primary, secondary as well as tertiary sector. Cooperation leads to the creation of a synergetic effect, with an impact on the whole region in which the cluster is located. Clusters represent a geographically concentrated group of mutually linked businesses, specialized suppliers, service providers, firms in related sectors and associated institutions, such as universities, agencies and trade associations of various focus, which compete but which also cooperate. In clusters cooperation between businesses is supported, innovation processes which have an interactive character are speeded up and new effective instruments of regional development are introduced. Clusters are often linked with concepts like national or regional systems of innovation, the knowledge-based economy, or the knowledge economy. The main argument is at the same time the fact that processes which support the new, knowledge-based economy – technical know-how, the formation of innovation and information – are discovered and develop better if this development is concentrated in a certain location, that is, it is localized.

In the recent years it turned out that the so-called. "new sectors" are often concentrated in particular areas, in which there are competitive enterprises on global markets and are significantly export-oriented. In particular, this concerns goods for which transportation costs make up a small part of the total costs. The current trend in planning the development of regions in connection with the use of innovation are exactly the policies which utilise industry clusters [1].

From the 1990s M. Porter started to promote the cluster as a concept based on an analysis. He introduced the cluster as a basic tool of industrial and regional policy, and as one of the tools to achieve competitiveness in a region. International institutions such as the OECD, the World Bank, UNIDO, the European Union, as well as a number of states have started to be interested in ways to support local or regional clusters of enterprises to increase competitiveness [6]. In literatures we encounter a variety of definitions of cluster, e.g.:

Enterprise clusters are geographically concentrated groups of similar, related or complementary enterprises that have active channels for business transactions, communication and dialogue, and share specialised infrastructure, labour markets and services and which are exposed to common opportunities or threats.

Clusters are generally created spontaneously by local business entities wishing to take advantage of the interaction of several factors that exist in a geographic area, such as the presence of customers and suppliers, access to skilled labour and know-how, the availability of specific natural resources and infrastructure, low business and communication costs as a result of geographical proximity, and the proximity to universities, training centres, research institutions, the presence of financial institutions and other private and public institutions [8].

Professor M. E. Porter suggested the cluster model in which the competitiveness of firms or industries in the location is achieved through four interlinked effects. The model determines the determinants of regional productivity and hence the competitiveness. He suggested a special diagram for cluster analysis called the Porter's diamond (Fig. 1).
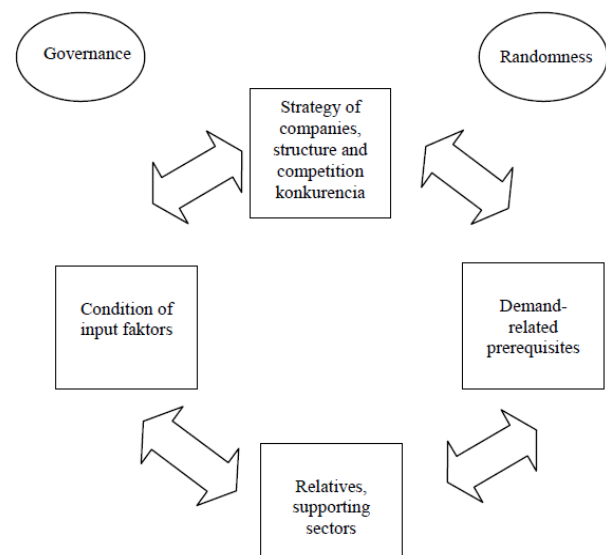

Figure 1 Porter's diamond [10]

Quality of input factors – these are the natural resources, capital, demographic conditions, geographic position, communications infrastructure, the level of a qualified labour force, universities and research and specialization of a region. The specialization of these inputs is critical.

Human resources – represent the key factor of competitiveness. They have the capability to actively influence all other inputs and other points of the diamond. An important aspect is the professional structure of education and cohesion with the labour market. This conditions the speed of usability of the local labour force without the need for requalification, which increases costs for firms and investors.

Strategy of firms and rivalries – assumes strong competition in a sector which is based on non-pricing practices. In such an environment it leads to extensive investments and innovations. We include here risk capital and investments into the hi-tech sectors, which drive progress.

Government stimulus and regulation – assumes a certain method of help for several reasons for disadvantaged companies to maintain production. It may, however, lead to a disruption of economic competition.

Conditions of domestic demand – requests of consumers give businesses valuable information about what they can expect on a supra-regional market and create pressure for innovation. The most demanding consumers on the local market are in particular foreign investors. In cooperation with regional firms they contribute to the quality of products, services and the overall business conception. The state is also a demanding consumer, because it addresses a great many companies and thus to a large measure influences the subject of production.

Related and supporting sectors – enable inter-sector cooperation, and this contributes to a faster flow of information. Businesses can influence the technological efforts of their suppliers. "It is much easier for a business to perceive an opportunity and to develop and to implement new ideas, if they are located among similar firms and in the vicinity of suppliers" [2, 12].

M. Porter presents the following ideas in his theory of competitiveness:

- The most important sources of prosperity are not inherited, but created.
- Productivity depends on the value of products and services (e.g. on their uniqueness and quality), the efficiency of their production.
- Prosperity does not depend on which sectors compete in a region but on the way these sectors are competing in the sectors.
- Prosperity of a region depends on the productivity of all its sectors.
- Productivity in a region is a reflection of what the domestic and foreign companies have chosen to do in the region.
- Local industries are fundamental importance for competitiveness.

- The basis of prosperity of a region is its productivity and thus competitiveness, which depends on the region's innovative capacity.

It can be seen in these starting points that regions compete to offer the most productive environment for businesses. When creating a productive economy, the public and private sectors play different but interdependent roles. The main source of productivity growth, which determines competitiveness, is innovation.

4 IDENTIFICATION AND ANALYSIS OF CLUSTERS

Cluster mapping or identification is a process of analysing industry clusters, clusters of enterprises and other entities. The purpose of the identification, the so-called "mapping", is to recognise and describe the existing or potential clusters, competitive advantages, which have the potential to develop further and faster. The aim of this process is to determine whether there is a potential within a prospective industry for the formation and development of clusters, i.e. in particular, the links between firms in the sector and the existing or potential ties to other institutions, including universities in the region. It also helps to define common objectives and strategies, which can be further elaborated on. The mapping process focuses on the following activities [3]:

- Identification of actual or potential clusters in counties, districts and cities.
- Identification of key challenges and opportunities for the groups of companies and other actors, including universities and research institutes, which can help increase competitiveness and foster innovation.
- Drawing up action plans for groups of actors with a view to address common problems and opportunities with state financial support.

The cluster analysis is carried out at different levels (Table 1) [1]:
- Enterprise level - cluster is around one or several large companies.
- Sector level - industry group bonds at different stages of the production chain of similar products.
- National level - represents the level of the economy of the state.

Two different approaches are used in the field of mapping and identification of clusters [7]:

Identification of clusters – the "top down" approach: In the context of national policy-making and regional economic development there is a generally accepted requirement to focus on supporting the development and funding of key sectors, where is an actual or potential competitive advantage. Once these sectors have been identified, it is possible to proceed to

undertaking cluster initiatives as an effective way of fostering their development on the basis of a dialogue and the implementation of the common strategy.

Level of analysis	The concept of cluster	The focus of the analysis
National level (macro)	Links of groups of industries in the economy as a whole.	Special patterns of the national or regional economy, the need for innovation, upgrading products and processes in megaclusters
Level of industries (meso)	Internal and cross-sectoral linkages at different stages of the production chain of similar products	The SWOT analysis and comparative analysis of each sector (benchmarking)
Enterprise level (micro)	Specialised suppliers concentrated around one or several companies or several essential companies	An explanation of the innovative needs, strategic business development, analysis and management of chains, preparation of innovative projects based on cooperation

Table 1 Levels of analysis of the clusters

The process of identification of clusters is divided into six steps [4, 12]:

1. The first step is defining the economic region the analysis will be carried out in.
2. In the next process an analysis of the economic indicators (employment, export, added value, profit, etc.) is done in sectors from the viewpoint of concentration in the region.
3. Groups of crucial exporting sectors in which it is possible to anticipate mutual relations are identified and selected, which comes from general knowledge of the sector from the viewpoint of the value chain and from knowledge of the regional economy.
4. Verification of the validity and possible specification of the definition of the cluster is the next step.
5. Performs mapping of a cluster, a so-called graphic visualization of the sectors and links of a cluster in a region through the form of a map of clusters.
6. The last step represents an evaluation of the importance of a cluster for a region and for an analysis of growth trends. This step is basically performed continuously

Identification of clusters - the "bottom-up" approach:
The fact that there is no overall mapping carried out at national or regional level should not affect the identification or development of clusters. Clusters work well when people come together, understand the common problems or opportunities and decide to address them on the basis of cooperation. This type of cooperation takes place within the industry, and where

cluster initiatives work. It may also involve other participants, including regional and local governments.
The bottom-up approach is an important aspect of the identification of clusters regardless of the public data available, in order to create a realistic view of the potential in clusters. A cluster map is a useful way to search and visualise relationships in the supply chain or the value chain in a cluster. It can also help in supporting the cluster on the export markets and attract new regional investments made by companies which can either fill the gaps in the supply chain or benefit [6, 11].

To determine the potential clusters obtained by mapping or by selection it is necessary to determine the position of these clusters. For each potential cluster it is recommended to carry out an analysis on the basis of which it will be decided whether it makes sense to develop the cluster. The information for the analysis can be obtained from the following sources [9]:

- *Commercial databases* – a full range of commercial databases is available for calculations. However, most of these databases are not sufficiently detailed.
- *Existing studies* – studies, analyses, publications, expert reports, etc., that are related to the given industry.
- *Interview with experts* – representatives of the employer's association, independent experts, and consultants from the subject field, university teachers, employees in a related research institute.
- *Interview with representatives of companies* – information can be obtained by personal interviews with representatives of the selected companies, seminars with representatives of companies, and a mutual discussion.

5   CONCLUSION

The competitive advantage analysis method helps map the cluster potential in all the main industrial sectors in the given region. This is a combined method, which here leads to the use of quantitative and qualitative data and information. Thanks to this, the method is demanding for the input data, but it has a high predictive ability. The disadvantage is dependence on the statements of experts and thus a potentially distortion of the result. The method comes from the managed interview with the experts of individual organizations. It is possible to combine different data inputs. Aside from the results of the competitive advantage analysis method, it is possible to include, for example, the LQ quotient, growth in employment in the region and the like.

Among the other methods which are used for identification of clusters is the Maurel-Sédillot index, the new geographic method (Ripley's K-method), the index of diversity for measuring the specialization of industry in a region and the index of geographical concentration.

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