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**Assessment of the performance and
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in the Moravian-Silesian Region**

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Assessment of the performance and competitiveness of the selected clusters in the Moravian-Silesian Region

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Abstract: In recent years have been recording the number of sectorial clusters of firms and their links with a research and academic sphere unprecedented prosperity in the Czech Republic. The trend and popularity of clusters in regions are considered as an important source of competitive advantage of given locality. In particular SMEs can in this way overcome a certain weaknesses of this type of business and strategically use of so-called synergistic effect. Many times, it was stressed to be SMEs as the foundation of any economy, but they do not have the necessary economic force. These problems help to remove specific form alliances – the cluster. The competitiveness of regions goes hand in hand with support for cluster organizations. Clusters are perceived as modern and well-defined type groupings of entities from certain industry or field. The aim of this paper is to evaluate and assess the efficiency and competitiveness of selected cluster groups in the Moravian and Silesian region. The partial aim is a generalization of international methodologies for assessing the performance of clusters and linking this methodology with the basic principles of competitiveness evaluation. On practical example will be applied Porter's diamond combined with the EFQM model and Cluster Management Excellence methodology. The outcome of the paper will be the evaluation of cluster initiatives. There will also be proposed basic precautions that should lead to the desired performance level of international excellence cluster. For the selection of appropriate proposals will be used the multi-criteria decision analysis, to identify those measures that are currently most advantageous for the cluster.

Introduction

In recent years have been recording the number of sectorial clusters of firms and their links with research and academic unprecedented prosperity in the Czech Republic. The trend and popularity of clusters in regions and micro-regions are considered as an important source of competitive advantage of given locality. As Stejskal (2011, p. 13) interpreted, the regional policy objectives is "balanced regional development with regard to their economic and social potential."

In particular SMEs can in this way overcome certain weaknesses of this type of business and strategically use of so-called synergistic effect. There comes to multiplying the power of individual participating companies from the SME segment and mitigation, respectively elimination of some major negatives of their development. Many times it was stressed that SMEs are the foundation of any economy, but do not have the necessary economic force, high administrative burden acts on them and still persists difficult access to capital in many cases. Inalienable fact is the weak positions of SMEs in public tenders. These problems help remove specific form alliances - the cluster.

The competitiveness of regions, hence the entire national economy, goes hand in hand with support of cluster organizations that are supported, among others, by public funds. Clusters are perceived as modern and well-defined type of groupings of entities from certain industry or field. The existence of clusters opened the possibility of support for these sectors and increase their efficiency and competitiveness.

The aim of this paper is to evaluate and assess the efficiency and competitiveness of selected cluster groups in the Moravian-Silesian Region. The partial aim is a generalization of international methodologies for assessing the performance of clusters and linking this methodology with the basic principles of competitiveness evaluation. On the practical example will be applied Business Environment Evaluation model, the BEE model which combines the principles of Porter's diamond with the EFQM model and Cluster Management Excellence methodology. The outcome of the paper is the evaluation of cluster initiatives in the Moravian-Silesian Region on the basis of this evaluation and assessment of its competitiveness according to the chosen methodology. There will also be proposed basic precautions that should lead to the desired performance on the level of international excellence cluster. For the selection of appropriate proposals will be use the multi-criteria decision analysis to identify those measures

that are currently most advantageous in term of use of market opportunities and its economic benefits.

Clusters and cluster initiatives

Clusters are the types of network business, which has experienced in the past ten years with a significant expansion. Business network is considered the interconnection of complementary businesses, within which businesses together to create the final product, and they can, for example, cooperate on research and development to create common logical solution build by the distribution network, also after-sales service in a situation where they remain independent businesses (Pavelkova, 2009). Networking for business growth must be strategic and focused. Not everyone can help to move business forward, but everything can be driven by the intention to grow the business.

Networks, respectively the clusters are primarily intended for clustering and networking of small and medium-sized companies in order to support the growth of their competitiveness, we must remember this one very important fact. In connection with the generally perceived opinion, that these small and medium-sized enterprises are the backbones of Czech, respectively European economies. We should also mention the reasons why these companies are looking for business networks. These reasons described Kolečák (2004), the primary reasons for the creation of business networks are a desire of companies to achieve an increase in the value of products, cost-sharing, or competitive forces reduction.

Therefore, in connection with the network business is a meeting and talking about the formation of the so-called Hollow and virtual businesses. These businesses focus their processes on activities that add a high value added. This type of enterprise respectively the Hollow enterprise Mikolas (2005) interprets as the company, which is broken down into sub-bundles, with its own potential, which leads to a condition as we are talking about the so-called enterprise management, or intra business. An earmarking and outsourcing of individual identified activities and focusing on activities that add high added value leads to higher business efficiency, so it describes the Hollow enterprise.

Conversely, a virtual company itself already represents a huddle of mutually reinforcing businesses that join together to collaborate frequently on clearly defined period of time, to ensure existing orders or to achieve certain goals. Synek et al. (2011, p. 246) define the virtual enterprise as

"phenomenal specific forms of corporate networks, namely dynamic networks, because they are set up temporarily and changes its structure in relation to the problems, it is the sort of structure formed ad-hoc and temporary." The business network in the form of clusters is often also referred as the so-called sectorial group of companies and it is important for us to see all their specifics, including their understanding of the current economic environment.

"Principles of economic states that industries often are locally concentrated and gain significant benefits from externalities, such as economies of scale and" knowledge spill-overs "arising from these concentrations." (Studenikova, 2011, 62 p.) The very interconnectedness especially industrial enterprises by Marshall brings with them "localization economies" and as their primary reason for establishing are the natural conditions in the form of climate, mineral resources, soil, etc.

There are many definitions of clusters, among the most concise definition include Porter's definition when he says that Clusters are geographic concentrations of related industries and associated institutions. The agglomeration of related economic activity is a central feature of economic geography. Cluster definitions are groups of industries related by skill, technology, supply, demand, and/or other linkages. This paper focuses on regionally comparable cluster definitions (i.e. the industries that constitute a cluster (e.g. Biopharmaceuticals) are the same for all regions). Inter industry linkages are identified through the co-location patterns of industries across regions or with a range of national data available across industries. The identified linkages are used to group industries into a set of defined clusters, allowing clusters to be compared across regions.

Another definition, which is important in terms of the concept of clusters for the purpose of this paper, is to define the clusters according to CzechInvest agency, where the cluster conceived as "a set of regional affiliated companies (entrepreneurs and associated institutions and organizations - especially tertiary education institutions (universities, colleges) - whose links have the potential to strengthen and enhance their competitiveness."

For the purposes of this paper are therefore seen as clusters group of interconnected entities in a particular sector and in geographic clusters, which means close ties strengthen and enhance their competitiveness, hence the performance.

If we would like to deal with the cluster's performance, it is necessary to perceive the concept of cluster initiatives, where "Cluster initiatives are organized efforts to increase the growth and competitiveness of clusters within a region, involving cluster firms, government or research community. These initiatives over the past ten years become a central feature of microeconomic policy linked to industrial policy, regional policy, for SMEs, FDI attraction, and research and innovation policies." Sölvell, Lindqvist and Ketels (2006, p. 16)

Clusters and their benefits in regional policy

Clusters in recent years become one of the instruments and means of promoting regional development and competitiveness. For this reason, the clusters become part of not only regional policies, but also policies at the state level respectively Czech Republic, respectively the European Union.

Clusters are groups of interconnected companies, which together cooperate to strengthen and increase their competitiveness, including e.g. the development and support of research, development and innovation in the sector. Sölvell, Lindqvist and Ketels (2006, p. 20) confirm the hypothesis that functional clusters are carriers of economic growth state that "clusters offer a fertile ground for innovation and improving the competitive advantage of companies." In this context Sölvell, Lindqvist and Ketels (2006) give the idea that there are at least three very strong arguments proving the claim that innovation and modernization are directly related to the existence of clusters. Among these arguments then are: the need to reduce technical and economic uncertainty, the need for constant and continuous collaboration and cooperation between companies and specialized institutions, which belong to research and educational institutions, including universities, and the need for contact and interaction of the exchange of information on new findings and knowledge in their respective fields.

In general we can say that clusters are primarily the concentration of small and medium enterprises (SMEs) that make up these clusters in small and large economies. Mynarzova (2014) on this subject states that clusters represent a different way of organizing of economic activities and the perception of the economy, where is often very difficult to draw the boundaries of the cluster. These boundaries of the cluster should thus include all firms, industries, and institutions with strong ties horizontal, vertical or institutional, as part of clusters are often classified in different categories of industry and services.

CzechInvest (2007) defines the basic principle of economic development based on a sequence of innovation - productivity - prosperity, which is the basis of the process in the relations between private parties, particularly the business sector and the State, as the government and universities. In this environment it is being called a cluster, "Connecting link" between relevant stakeholders.

From the above-mentioned it is clear that clusters are currently gateway for clusters, respectively organizations, which significantly help the development of regions and are one of the remarkable features of regional policies. This confirms the reason Kloudova et al. (2010, p. 39), which identifies clusters of creative clusters, whose address says, quote: "A cluster is very important for the development of the creative economy and unites both private and public activities and assists in the development of a creative city or region and is able to pass a creative idea."

Clusters and their importance for competitiveness

The influence on increasing competitiveness clusters is generally indisputable. The basic economic effect of clusters is their influence just on business competitiveness, regional extension states. This fact also indicates Pavelkova (2009, p. 27), and further asserts that: "Clusters allow to stimulate the economic growth of national economies through increased competitiveness and performance of businesses, encouraging innovation, including more efficient use of research and development, support for new businesses attracting foreign investment, increasing exports and influencing employment in the region."

The competitiveness of firms, which supports cluster is derived from competitive advantages. These benefits are shaped by the activities of the companies in their presence in the market and are often closely related to the level of innovation respectively level of activity of these companies in the field of research and development. Here again, the clusters will play a significant role as primary actors initiate the process of research, development and innovative activities and projects. The important role of innovation is also confirmed by Stejskal (2011, p. 28) argues that innovation is just "way to increase the competitiveness of companies, respectively the whole region and that this process is closely related to research and development and new technologies, which are an important factor in the development of the region."

The need to evaluate the performance of clusters, respectively cluster organizations is essentially based on their support of the institutions, public or private. According to the fact that clusters are regional clusters of firms, on the one hand, financed from the resources of these businesses and on the other by the institutions of the public sphere such as government agencies, etc. This idea is also confirmed by Sölvell, Lindqist and Ketels (2006, p. 83), who report that information on the performance of cluster organizations are very important for institutions that fund this initiative, whether they be e.g. the government agencies or private companies, mainly because, and quoting: "to be convinced that their money is used and spent effectively."

Methodology of the research

For practical application has been created new model Business Environment Evaluation model, so-called BEE model. The emergence of this model has been used widely applied methodology for the evaluation of the competitiveness and assessment of the clusters.

Porter's diamond is a model used as a part for the strategic analysis stage of the strategic planning process. Porter's diamond describes and analyses the environment or branch of the organization, in this case the cluster and its members. This model identifies the competitive advantage and as stated Stejskal (2011, p. 47) out of it, "identifies factors interrelated influences by which firms achieve competitive." In this model, we follow four basic factors, which are: the business strategy, the structure and rivalry, the terms of input factors, the demand conditions, and the supporting and related industries.

The second model from which the model BEE has been created is based on the EFQM. Applied methodology for evaluating the performance of the cluster, respectively the quality of its management is based precisely on the basic elements and principles of the EFQM model. This fact close ties between the EFQM model and method of benchmarking confirms Lang (2007, p. 235), which states: "The quality of this model can be used versatile, self-assessment, evaluation of third parties and as an indicator of the benchmarking. The EFQM Model promotes benchmarking through the creation of expert discussions and working groups. "The Czech Society for Quality adds that." The EFQM Excellence Model is a practical, voluntary framework that enables organizations to: assess where they are on the road to excellence, develop a common vocabulary and way of thinking about the organization to facilitate effective communication of ideas both within the

organization and outside, to unify existing and planned initiatives while removing duplication and identify gaps and prepare a basic structure for the organization's management system."

The Cluster Management Excellence methodology is based on the EFQM model. The Cluster management Excellence primary objective is to evaluate the quality of the management of the cluster and helps to achieve its international cluster of excellence, respectively competitiveness and the competitiveness of its members, that also confirmed Svobodová (2013) which states that this model currently places great emphasis on targeted change management within the organization, including the strengthening of its flexibility, sustainability, risk management and the ability of the organization to prove rationally, systematically and quickly identify opportunities to achieve its development and growth.

For the selection of appropriate proposals using multi-criteria decision analysis to identify those measures that are selected cluster initiative currently most advantageous use of market opportunities and economic benefits. For these purposes, is most often used the Saaty method of paired comparisons. In the design of the method is created the so-called Saaty matrix through which is subsequently pairwise comparison performed.

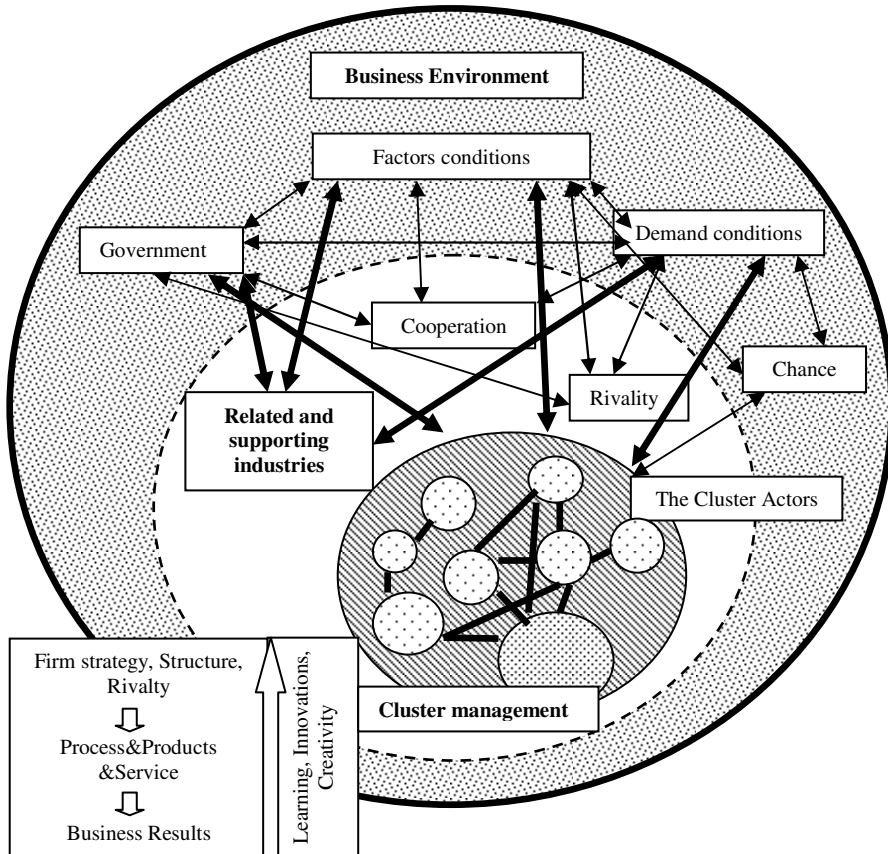
Methodology Cluster Management Excellence is based on the evaluation of the quality management from management, which is considered as the most important aspect of the activities and processes within the cluster, which affects the efficient achievement of stated objectives. This methodology is based on the principles of benchmarking. Furthermore, common standards for excellent cluster management enable better mutual understanding necessary for transnational cooperation between cluster and network organizations and by this are important to promote successful international cluster co-operation, in particular for the benefit of the participating SMEs. The Quality Indicators focus on the cluster organization hosting and operating the cluster management, not on the framework conditions or a cluster as such, as demonstrated in figure 1. The item to be managed (the cluster as such) have to fulfil certain minimum requirements when considering the excellence of its management (certain minimum size, age, etc.). Quality Indicators cover the following dimensions:

1. Structure of the cluster (level 2)
2. Typology, governance, co-operation (levels 1 and 2)
3. Financing cluster organization management (level 1)
4. Strategy, objectives, services (level 1)

5. Achievements, recognition (level 1)

The simplified model called Business Environment Evaluation Model, BEE model based on the EFQM methodology, the Porter's diamond and the methodologies Cluster Management Excellence was created by the author and is captured in the following figure.

Figure 1. Business Environment Evaluation model, BEE model



Source: own model BEE based on the Porter's diamond, the EFQM model and the Cluster Management Excellence

The clusters are complex and dynamic structures that are subject to continuous change. The strong clusters can promote economic growth through leveraging the innovation and business potential of a region. New employment opportunities, new products and services, new companies, new

R&D activities and new patents can be the result of activities within a cluster. A professional cluster management can contribute to such a development through projects and services that tap into the cluster's potential. The European Cluster Excellence Initiative, initiated by the European Commission DG Enterprise and Industry, developed methodologies and tools to support cluster organizations to improve their capacities and capabilities in the management of clusters and networks. Being members of the European Cluster Excellence Initiative 13 project partners from nine European countries - all well experienced in the field of cluster management and support - created a uniform set of cluster management quality indicators and developed a quality labelling system for professional cluster management with the aim to get this methodology and proof of quality accepted all over the Europe.

The basic characteristics of the region - the Moravian-Silesian Region

Moravian-Silesian Region was established simultaneously with the other 13 Czech regions on 1. 1. 2001, under legislation adopted in 2000. It is located in the easternmost part of the Czech Republic (towards the center of Prague is located about 300 km as the crow flies). If the region is perceived supra-regional, then its location on the border of three countries (Czech Republic, Poland, Slovakia), almost in the middle of a European space which is very convenient. In terms of the Europe, the region located between Vienna, Austria, Polish Silesian conurbation and Slovak, Bratislava. The power of position throughout the region are trying to further emphasize regional actors, who has long striven to link some activities Moravian-Silesian Region, Zilina Self-governing Region and Silesian province in certain activities with a view to creating significant territorial center in a European perspective. (CSO, 2013)

Region currently has an area of 5,427 square kilometers and consists of six former districts and the 22 municipalities with extended powers. In the region there are a total of 300 municipalities, of which 5 are statutory towns, 35 cities and 3 of the township. On 31. 3. 2010 was the state of the region's inhabitants 1,247,373 inhabitants, which was the highest among the regions of the Czech Republic. On 1. 1. 2011, the largest city of Ostrava had 310,464 inhabitants.

Basic data on the GDP in the Moravian-Silesian Region (Source: Yearbook of the Moravian-Silesian Region 2012)

- GDP at market prices 392,166 mill. CZK
- Moravian-Silesian Region share of GDP in the Czech Republic 9.8%
- GDP per capita 319 249 CZK

In the past, the Moravian-Silesian Region was significant especially in heavy industry, particularly engineering, metallurgy and mining. These industries largely affect the character of the region so far, and to quantify the research and development capabilities, then most of them are associated with large companies in these sectors. In recent years, the region stands out even more promising industry. Heavy industry is being replaced by fields of manufacturing; there is a considerable development of services. Business development in a free market environment has significantly changed the structure of the business. Many restructured companies were bought by foreign investors, local companies, particularly small ones, respectively medium, is evident in the field of information and innovative technologies, electronics and automotive industries. In addition, in the country there is a number of smaller and larger companies that deal with both traditional craft disciplines, so-called high-tech and hi-tech products.

In the Moravian-Silesian Region, there is wide application of new investment projects. There are several differently oriented business incubators (private, university and public) that support start-ups and young entrepreneurs. Domestic and foreign investors are also used industrial areas and industrial zones, which are located in the region of a few whose full the average is about 75%.

Clusters in Moravian-Silesian Region and application of selected methods of assessing performance and competitiveness in terms of a specific cluster

Moravian-Silesian Region has throughout the Czech Republic a long tradition and experience in strengthening the competitiveness of local industries through cluster cooperation. The cooperation is based on the industry association of businesses, universities and research and development institutions, which are being institutionalized in the form of cluster organizations. There are currently in the Moravian-Silesian region a total of 12 cluster organizations (CzechInvest, 2015), of which the oldest is the National Engineering Cluster, based in Ostrava (founded in 2003

originally Silesian Engineering Cluster) and the youngest among Cluster Green Horizon Association, founded in 2011, also based in Ostrava and dealing with treatment waste for reuse.

For previously outlined analysis was elected Silesian Automotive Cluster. Moravian-Silesian Automotive Cluster c.a. (Hereinafter referred to as MAK) was founded in 2006 to promote innovation and increased competitiveness and export capabilities of interconnected companies, businesses and institutions in the Region. The founding of the company in the beginning especially sought to build a common identity firms in the cluster and the goal was to engender confidence and positive attitudes towards the automotive industry and the entire region. The main objective is the development of the automotive industry through industrial businesses, secondary schools and universities and scientific research institutions. (MAK, 2015)

Sustainability benefits for their members cluster currently actively developing and providing innovative approaches through coordination teams that are focused on the following:

- Developing human potential - working team Human Resources Development (education and development competencies).
- Developing and supporting development activities, testing and metrology - working team for Laboratories and Testing (product testing and supporting for innovation)
- The development of trade and cooperation - working team for Trade Relations (savings funds and opening paths to new markets).

Among the first steps included a study that mapped the automotive industry in Moravian-Silesian Region. Declared benefits for members of the cluster are following:

- Cluster develops and supports innovative projects, processes and products with added value.
- Cluster increases the voice and power of small and medium businesses.
- Companies have a better chance of obtaining assistance co-financed by the Structural Funds and other.
- Promoting civic association members and MAK at home and abroad.

- A member of the cluster gets easier, faster and usually free information from management cluster, supporting institutions and members that as a separate company gained or acquired very seriously.
- Cluster works closely with state organizations:
 - The Czech Invest, www.czechinvest.org
 - The Ministry of Industry and Trade, www.mpo.cz,
 - Regional Office of the Moravian-Silesian Region, www.kr-moravskoslezsky.cz,
 - The Regional Development Agency www.arr.cz,
 - The Association for the Development of the Moravian-Silesian Region, www.msunion.cz.

The mission of the cluster is creating conditions and promoting competitiveness members for sustainable development of the region. The vision of the cluster is to become an integrator companies, educational and research institutions and other stakeholders whose activities support the development of the automotive industry in the region.

Values of the cluster:

- People, their knowledge and skills,
- Collaboration based on trust,
- Innovation and Flexibility,
- Mutual benefits (MAK, 2015).

Brief description and analysis of data (selected areas)

The results presented are selected from a larger set of data and results and aims to document and support the newly created model. The Moravian-Silesian Cluster was founded in September 2006, and at the time had 22 members. Based on the age of the cluster can be identified today maturity cluster. It has been shown that the majority of cluster organizations that have achieved excellence were founded in 2002 - 2006. It was in this period, the establishment of the Moravian-Silesian automotive cluster falls.

Legal status (civil association, today the Association) is the most common form of legal form clusters in the country.

It currently has 66 cluster members, in the category of educational and other 8 members are classified into categories of R & D is included 11 members, other categories are as follows:

- TIER 1 10 members,
- TIER 2 12 members,

- TIER 3 12 members,
- TIER 4 13 members.

If we focus on the aspect of financial resources Silesian automotive cluster is pumped 53% of public funds, 27% from private sources, and 20% from their own resources.

When analyzing the use of regional growth potential were determined to be approximately 20% of the number of changes in cluster membership in 24 months, and 35% of the value of the ratio of the number of cluster members to the total number of potential regional cluster members. Based on the results it can be concluded that the cluster despite the relatively long period of existence must constantly seek potential for its development. The analysis was studied further corporate governance cluster. Based on the results, it can be concluded that the administration and management of the cluster are at a level that can be as strong.

In the area focusing on technology development and transfer information cluster perform many activities that are implemented by each working group. The purpose of these working groups is to implement projects - in 2014, for example. Automotive without borders - and through individual projects implement the strategy of the cluster - see above. From this perspective, the cluster achieves results at a very high level. Among individual cluster members for regular exchanges of information and there is a strong support for the exchange of experiences. Also in this area are achieved very good results. To a large extent leads to the use of modern communication technologies. Human resources development is not declared in the strategy of the cluster, but is also continuously implemented. The results are noticeable in particular in the field of cooperation with academic sphere.

Within the application of multi-criteria of a decision-making, as the first step in the decision-making process, there was the evaluation establishment of the criteria and the weight of their importance. The method was used for the pairwise comparisons using a nine-point scale (according Subrt, 2011, p. 174). Calculations weighting of the criteria were subsequently used within the structure of the final table with the results of decision analysis with respect to the proposed recommendations. To formulate the concrete recommendations of AHP method was used, which allowed to decompose the problem into individual sub problems and then to work individually with each evaluation criteria. The criteria (recommendations) were chosen as follows (an excerpt):

- Determining the strategy for the period 2015-2020.
- Creation and development of products and services.
- Targeted support cooperation between cluster members.
- Strength and stabilization of the membership structure of the cluster.
- Creating a concept plan for financing cluster.
- The concept of monitoring the satisfaction of cluster members.
- Stabilization of cluster membership structure.
- Increased cross-border cooperation of neighboring regions.

The results of the evaluation of the biggest benefits of highest priority was assigned to implement the recommendations out a strategy for the period 2015-2020, followed then the targeted promotion of cooperation between members of the cluster concept and monitoring the satisfaction of cluster members.

Based on the analyses clearly showed recommendation regularly monitor individual elements affect the performance of the cluster not only one or a few selected methods, but on the basis of a comprehensive approach. Such may be e.g. the proposed BEE model, the Business Environment Evaluation model, which includes both the parameters and objectives Porter's diamond and characteristics and objectives of the EFQM model and the nature of the Model Cluster Management Excellence.

Conclusion

In the context of increasing global competition and the pursuit of each company to achieve the highest performance, it is important to find a competitive advantage, to this end can also occur through cluster initiatives and streamlining the functioning of the sector. Businesses are exposed to global pressures of globalization and the need to evolve a great effort to maintain competitive advantage, which is absorbed by the market. One option for gaining competitive advantage is therefore their involvement in the cluster. Successful cluster initiative enhances the performance of participating enterprises and drives economic development across sectors and regions.

Performance evaluation of clusters and individual companies involved in cluster initiatives is possible using a simplified model Business Environment Evaluation model. The advantage of this model is to link

three main methodologies for assessing the performance of clusters and the cluster model Management Excellence, the EFQM model and the Porter's diamond. Another positive aspect of this BEE model, Business Environment Evaluation model, can effectively use the cluster initiative itself, or individual players cluster initiative. It is one of the ways to assess the performance of cluster initiatives and their members without hard financial indicators. The weakness of this model is the same as the other models, subjectivity analysis and asymmetric information. These two weaknesses can prevent plugging of objective evaluators to process applications of the Business Environment Evaluation model.

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