SWOT analysis of method „The multi-dimensional evaluation of clusters”

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Abstract: - The goal of this paper is to judge the strengths and weaknesses of method „The multi-dimensional evaluation of clusters and cluster initiatives”. This method was selected as the best method for evaluating clusters in the Czech Republic. It was solved within the specific research at University of Hradec Králové. The method was selected using multi-criteria analysis of alternatives; it was on the basis of several criteria and their weights. The expert group chose this method as the best with considering all conditions. This method was used to evaluate the efficiency of Czech Stone Cluster in the next phase of research. Given the fact, that the application of the method to other clusters is planned, it is suitable to evaluate this method.

Key-Words: - cluster, evaluation, method, Czech Republic, SWOT analysis

1 Introduction

Current business environment is strongly influenced by many trends or forces. The formation of clusters is one of them is. The importance of this issue at European level show many publications [1], [2], [8].

Cluster initiatives can contribute to comprehensive national competitiveness efforts that include policy reform, trade capacity building, a private-public dialogue, regional economic development, workforce development, etc. At times, they become a catalyst, generating broad public understanding and support for the economic reform agenda by working with the media, universities and think tanks, knowledge and technology foundations, industry leaders, government officials, etc. When designed carefully and implemented efficiently, cluster initiatives may well be one of the most effective tools in a broader context of policy reform and other private sector development initiatives [13].

There are many characteristics of clusters. While Porter [11] defines clusters as "a geographically proximate group of interconnected companies and associated institutions - universities, public agencies or trade associations, in a particular field, linked by competition and cooperation", Steiner and Hartmann [12] consider clusters as inherently "social technologies" that enable and support the acquisition of knowledge and consequently their spread between economic subjects.

Successful clusters offer many specific benefits to participating companies. These benefits are reflected primarily in growth of efficiency, productivity, innovation activities and thus to increase competitiveness. What benefits the cluster achieved and how the involvement of firms in clusters effective for each of them, are important information providing feedback of the implemented activities. For this purpose, a relatively large number of methods evaluating the performance of clusters exist. So far, none of them have been recommended as the most appropriate. Different models within the clusters and national policies are emerging. It is a specific research titled "Methods of evaluating the performance of clusters with a focus on Czech Stone Cluster. The issue of performance evaluation of clusters was solved at UHK FIM in 2006 – 2008 within the GACR project “Measuring and managing of performance of clusters with birth No. 402/06/1526”. For continuing specific research, the knowledge gained in this period [9].

Recommended methods for measuring performance of the cluster in the domestic or foreign literature are [10], [9]:

a) cluster initiative performance model,
b) benchmarking of cluster initiatives,
c) mapping projects and exploration of development of clusters implemented by the M. Porter group,
d) evaluating the performance of clusters in accordance with Canadian NRC (NRC),
e) evaluation of regional intellectual capital in clusters,
f) multi-dimensional evaluation of clusters and cluster initiatives.

Existing methods of the evaluating the performance of clusters are relatively difficult to obtain information (for example: internal economic information of companies, time consuming data processing, etc.). Therefore, the method for evaluation of the functioning of clusters was searched. This method should have a very good explanatory value and shouldn’t be time consuming too much. This problem was solved by a team of experts. Due to multi-criteria analysis of options one of them was chosen. The following criterion was selected, according to which the methods will be selected [9]:
C1: Knowledge and availability of the method for Czech organizations.
C2: The applicability of the method in all sectors and sizes of clusters.
C3: Complexity of the method.
C4: Difficulty of the method for input data.
C5: Sensitivity of the method to changes in reporting, legislation, etc.

The highest importance was assigned to criteria C3 – method complexity and C4 – method complexity for input data. As revealed in the discussion, addressed experts agreed that these criterion is most important in terms of selection method for evaluating the performance of the cluster.

The multi-dimensional evaluation of clusters and cluster initiatives was selected [10].

a) evaluation of the performance of each company in the cluster
Data of business members were analyzed, for example: profit, revenue, ROA, EBIT, the equity. Furthermore there were these questions:
• How much the production capacity is used?
• What is the share of exports on average annual turnover of your company?

b) Evaluation of the performance of the cluster as a whole
• Evaluation of selected activities in the selected cluster (employee training, promotion, research and development, customer care, export, search for new sales opportunities, environmental protection certification).
• Characteristics of things that can improve the functioning of the cluster.

This method was extended to evaluate the level of social capital. It was due to the fact, that trust is an integral part of the majority of economic transactions. The trust is the result of repeated successful interactions based on reciprocity and mutual benefit. It’s high rate is desirable due to efficiency of economy [3]. It implies from implemented researches that regions with high level of social capital are more efficient in creating new knowledge than regions with lower level of the social capital [5]. The existence of confidence in relationships in a network of regional companies is found to be a critical element of their competitiveness [14]. A significant factor is influence of location conditions [6].

Furthermore the companies associated in the same region share a common regional culture it can facilitate the process of social learning. As researches show, these enterprises gradually build a common communication or other rules, standards and shared values due to repeated interaction [14]. Investment in social capital is a rational choice for business. It has three reasons a) social capital is the production factor together with the physical and human capital, b) social capital is the determinant of transaction cost c) social capital is a key factor in monitoring costs [7].

Cluster analysis was implemented using the method of multidimensional evaluation of cluster initiatives. The data were obtained from questionnaire survey between members of the cluster. Questions were formulated so that each of the five areas was specified. The specific focus of each of the questions is:

a) Evaluation of the performance of each company in the cluster

b) Evaluation of the performance of the cluster as a whole

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c) Evaluation of the effectiveness of activities which are realized in the cluster

These questions were analyzed in this part:
• Does your company allocated capacity for their own research?
• How do you search for suppliers of materials?
• Provide costs for the following activities in the past year (in% of sales): promotion, research and development.

d) Evaluation of the effectiveness of management cluster (cluster's Initiatives)

The questions were focused on these topics:
• Knowledge sharing (about suppliers, customers)
• individual promotion
• joint promotion
• characteristics of benefits of membership in CZECH STONE CLUSTER

e) the evolution of the cluster policy of a region / state

The expert team evaluated the membership of cluster in activities at national level or at international level. Here we analyzed the documents and possibilities about financial support for clusters in the region, state and across the EU.

f) Social capital

The trust between members of Czech Stone Cluster was analyzed, the willingness to help other members and cooperation between them. It was due to these questions:
• Do you see the future of your business positively?
• Are you willing to help other members in the cluster?
• Which members are working closely?
• Are you member of other associations (except Czech Stone Cluster)?
• Write three members of Czech Stone Cluster, which are the most active.

Within the application of selected method, attention was focused on Czech Stone Cluster, whose main focus is mining and processing of unique sandstones. Currently the cluster has 25 members. The aim of the association founded in 2006, is getting larger contracts for reconstructions of historic buildings, building transport infrastructure and artistic stone processing. Czech stone cluster aims to link science, education and practice to enhance competitiveness and increase number of innovations in the rational usage of mineral wealth in the country.

Applied method can be assessed by evaluation of the results and feedback from the Chairman of the Czech Stone cluster and due to evaluating activities of the cluster. The method will be assessed according to criteria upon which was chosen as the best.

2 Methodology

The SWOT analysis will be used for evaluating the method, which was applied to the clusters.

The SWOT analysis is an extremely useful tool for understanding and decision-making for all sorts of situations in business and organizations. SWOT is an acronym for Strengths, Weaknesses, Opportunities, Threats (Table 1). Information about the origins and inventors of SWOT analysis is below. The SWOT analysis headings provide a good framework for reviewing strategy, position and direction of a company or business proposition, or any other idea. The SWOT analysis template is normally presented as a grid, comprising four sections, one for each of the SWOT headings: Strengths, Weaknesses, Opportunities, and Threats. The free SWOT template below includes sample questions, whose answers are inserted into the relevant section of the SWOT grid. The questions are examples, or discussion points, and obviously can be altered depending on the subject of the SWOT analysis. Here are some examples of what a SWOT analysis can be used to assess:
• a company (its position in the market, commercial viability, etc),
• a method of sales distribution,
• a product or brand,
• a business idea,
• a strategic option, such as entering a new market or launching a new product,
• a opportunity to make an acquisition,
• a potential partnership,
• a changing a supplier,
• a outsourcing a service, activity or resource,
• an investment opportunity.

Table 1 SWOT analysis scheme

<table>
<thead>
<tr>
<th>Internal origin (attributes of the organization)</th>
<th>Helpful (to achieving the objective)</th>
<th>Harmful (to achieving the objective)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths</td>
<td>Weakness</td>
<td></td>
</tr>
</tbody>
</table>
3 SWOT analysis of method „The multi-dimensional evaluation of clusters”

Multidimensional evaluation of cluster initiatives has been applied to the Czech Stone cluster. Based on the evaluation of the obtained results and feedback from members of the cluster, these strengths and weaknesses of this method can be specified (Table 2).

Table 2 SWOT analysis of the method

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive evaluation of the functioning of the cluster</td>
<td>Low focus on ecology and sustainable development</td>
</tr>
<tr>
<td>Utilization of existing business data</td>
<td>Inaccurate definition of indicators in each area</td>
</tr>
<tr>
<td>Method based on the needs of cluster and Czech economic conditions</td>
<td>Ambiguity in defining the indicators required for each area to reach the goal of method</td>
</tr>
<tr>
<td>Low number of case studies, where this method is applied</td>
<td></td>
</tr>
</tbody>
</table>

The analysis above required the necessity to modification the method to eliminate the threat.

4 Proposals and recommendations

In terms of specified threats in the SWOT analysis these measures will be implemented:

- the exact specification of indicators for each area in the multidimensional evaluation of clusters,
- Economic indicators will be selected and classified with respect to their actual use in enterprises,
- The expansion of indicators, which will be characterizing sustainability development of clusters,
- Modification of the method and the creation of two versions with respect to purpose of use.

The first version will be created for clusters and they will be able to realize the evaluation of their efficiency. This version satisfies the requirements of low time-consuming treatment, uses existing data and knowledge in the cluster. Clusters will be able to apply this method once a year, for example, as a feedback. The second version will be used for the complex evaluation of the cluster from outside,

It will include more indicators, it will use the economic data of individual members of cluster.

Then other variables will be counted. Many data will be obtained by questionnaire survey between members by analysis of existing documents in the cluster, analysis of communication channels, analysis of advanced technologies for communication in the company, analysis of promotion, etc.

Modification of the method will be based on the following procedure:

a) members of the research team compile a set of indicators for each area of evaluation,
b) criteria for classification of indicators will be compile and then these indicators will be reduced. That will make the practical application of the method possible,

b) semi structured interview with the Chairman of the clusters will be implemented, which will be involved in further evaluation (it will
be the clusters in the region of Hradec Kralove: Omnipack HIT cluster, Czech Stone Cluster), with the purpose of obtaining information about importance of each actual indicator.

Semi structured interview with the management of clusters will be focused on the following indicators and areas:

1. Ecology (ecological production, waste, support of environmental behavior of employees or customers)
2. Communication (methods, tools, forms of communication, meetings)
3. Cooperation with Various Subjects (area of cooperation, public administration, other firms outside the cluster, companies inside clusters, universities)
4. Sharing (what, under what conditions, when, with whom, contribution)
5. Education (purpose, benefits, form, content, who is the subject)
6. Employees (satisfaction, relationships, productivity, health aspects, work discipline, safety, discrimination, service staff, meetings, competitions, trade unions)
7. Research and development (grants, projects, certification, financial aspects, outputs)
8. Customers (structure, behavior, relationship support, selection criteria)

Modification of multidimensional method for evaluation of cluster’s initiatives based on new facts.

Based on these measures a clear concept of multidimensional method for evaluation of cluster’s initiatives will be created. This concept will be complemented with methodological recommendations for processing. Based on this concept it will be possible to evaluate the effectiveness of clusters, their benefits and weaknesses of operation and it will be possible to compare them.

5 Conclusion

The aim of this paper was to acquaint with one of the phases of ongoing research project conducted at the University of Hradec Kralove, aimed at evaluating the performance of clusters. On the basis of multi-criterion analysis of variants, the method to evaluate the performance of clusters in the Czech Republic was chosen. This method was applied to the Czech Stone Cluster. Then SWOT analysis of using this method was performed. Adjustments to the method were made based on the weaknesses and threats. The method of multidimensional evaluation of cluster’s initiatives will be better prepared for further use. This method will be applied to other clusters in the country in the next period.

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References:


