## BABEŞ-BOLYAI UNIVERSITY

# FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION DEPARTMENT OF MANAGEMENT

# **DOCTORAL THESIS**

### SUMMARY

# **CLUSTER MANAGEMENT EXCELLENCE IN IT**

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**Key words:** knowledge management, clusters, cluster management, excellence, evaluation, competitivity, collaboration, human resources, innovation, IT, SME-s

#### 1. Clusters' role in economy

Today's economic map of the world is dominated by clusters: they are considered critical masses in specific areas of activity that can be found in one place only and have an unusual competitive success. Clusters are a striking feature of virtually every economy developed at a national, regional, county or even metropolitan level, especially in the case of economically developed nations. Silicon Valley and Hollywood are maybe the best known clusters in the world. Clusters are not unique; however, they have certain specificity and therein lies the paradox: the most durable competitive advantages are to be found locally: specific knowledge, relationships, motivation – elements that remote competing companies do not have. (They provide a competitive advantage that can be sustained only through continuous improvements to their product and company organization. Porter, 2011)

The concept of cluster was popularized and implemented by Porter, based on his so-called diamond model of competitive advantages. The concentration of economic activities in clusters is seen as a result of competitive advantages for businesses in identifying new and better ways to compete in various fields of activity in the industry and to faster bring innovation on the market. The four major factors that determine the competitiveness of an economy, namely:

• Factorial determinants: the nation's position depending on the available production factors, such as qualified work force or infrastructure, which are necessary in order to compete in a specific industry

• Demand determinants: the nature of the demand on the market for the product or industry service

• Associated industries and the supporting ones: the presence or absence of supplier industries and other related industries which are internationally competitive

• The company's strategy, structure and competition: the conditions of the national government, the manner in which they are created, organized and managed as well as the nature of the internal rivalry. (Porter, 1990)

The quality of member of a cluster allows companies to operate inputs more effectively and efficiently and better access to information, technology and to the flow of knowledge. Companies belonging to active, successful clusters can more easily benefit from experienced, specialized staff, achieving cost savings in recruitment and employee selection. They can also more easily attract and retain talented people in order to secure a competitive advantage. A successful cluster also ensures efficiency in obtaining the basic production factors by means of access to a specialized database of suppliers, with effects on the quality assurance and the decrease in the costs of the transaction.

Clusters minimize the need for stocks, eliminate the costs of import and possible delays and, because the local reputation is important, they reduce the risk that suppliers outbid or breach the contact. They also ensure the flow of knowledge and trust among members and facilitate the flow of specialized information while playing a vital role in the continuous improvement of the innovation capacity, especially in the case of IMM, by making use of the opportunities for innovation, thus providing the capacity and flexibility to act quickly.

Clusters are favorable to the formation of new businesses through the emergence and development of new companies, such as suppliers, as a thorough customer database drops their risks and makes it easier to identify opportunities of the local market. Creating new businesses in the framework of a cluster is part of a positive feedback loop, by amplifying each of the advantages shown and the improvement of the competitiveness through access to quality human resources.

If we refer to the conclusions of the empirical study, the research supports the need to ensure the financing from national sources, as a priority and a condition for the continuation and development of clusters in Romania, with particular emphasis on innovation and technology, particularly in the field of IT, as well as the formation and development of partnerships designed to ensure better exploitation of market opportunities, on the basis of an effective management of knowledge in order to facilitate the optimization of the flow of knowledge and its transfer within clusters

with the purpose of designing common development strategies aimed at obtaining synergies around innovative projects, developed jointly for one or more markets.

#### 2. Excellence in cluster management

The new trend considers cluster management a degree of excellence related to the way in which it responds to the needs and expectations of customers and their members. This means providing facilities for the development of human resources, with the important support of the management of knowledge and services supply at the level of the IT market requirements.

To achieve excellence in IT cluster management we must take into account the complexity of the processes, the diversity of the resources used and the requirements of the IT market. Ensuring excellence in cluster management requires addressing them through a systematic process, given that the product is the result of the joint effort of its members in relation to the requirements of the IT market. Excellence in cluster management starts from the traditional academic approach that focuses on the effort to always do better and be more efficient. Since processes in IT are considered essentially excellence processes, this concept is accepted and used both in business and especially in the academic world. The companies that are members of an IT cluster must eliminate approaching management as a "minimum" standard which is based on a filter vision, meaning that the services provided are rejected or accepted on the basis of rules or minimum criteria. Achieving excellence in cluster management means not only systems and procedures, but primarily assessing the requirements of customers and of the members of the cluster and building appropriate cluster structures to promote an organizational culture that can ensure a climate based on trust and performance. This means that the members of the cluster must implement the management of documents, total quality management, as well as the components of the strategy for continuous improvement.

Some principles and management practices within the cluster may vary from one organization to another, but experts consider that an important role in achieving excellence in cluster management is played by the top management of companies that should be involved in this process. We believe that excellence in cluster management in the IT field must focus on quality in general and the quality of human resources in particular, on knowing the details and the performance potential of its members, while the orientation of the employees of the companies that are members of the cluster must focus on designing new methods and processes and not only on improving the old ones. The top management should be actively involved in education, training and performance recognition. It must carry out all the possible changes in order to capitalize the opportunities to improve the organizational performance and ensure the orientation of all employees of the companies which are cluster members toward designing new methods and processes and not just focusing on the improvement of the old ones.

The involvement of the cluster management must be visible and easy to prove in order to encourage, in the case of the cluster, the involvement of employees and customization of areas of improvement.

#### **3.**The structure of the thesis

Chapter 1 of the thesis, entitled *"The Methodology of Research"*, addresses the general framework of research by exposing the overall objectives of the research, the specific objectives and the assumptions formulated for the process of research . In this first chapter the key concepts used in research are briefly presented, along with the research methods and tools used in the empirical study.

In Chapter 2, entitled "*The Knowledge Management. General Approach*" we define the concept of knowledge management and analyse its structure, and its defining elements, emphasising on the importance of this area to ensure the flow of knowledge within the clusters and with the purpose of innovation. We also do a review of the literature, using relevant sources of knowledge management closely related to the process of generating added value for the intellectual capital of the organization. We also present the types of approach : technological, organizational, ecological alongside the roles that the management of knowledge plays in relation to the organization, the educational institutions, the governing and other actors in the business eco-system.

In chapter 3, entitled " The role of information and communication technologies in the knowledge management - applications of the technologies of knowledge management – virtual business platforms" we present the main aspects of

the role of information and communication technologies in knowledge management and we link this concept and the IT component as facilitator in the process of conducting the flow of knowledge. It also summarizes the concepts and tools used to support and implement knowledge management.

In chapter 4 , entitled " *Clusters in the literature* . *Excellence in the management of clusters* ", the presentation , based on the concept of cluster, focuses mainly on appropriate literature dealing with the concept of excellence in the management of cluster. As a model for analyzing the clusters and their defining elements we use Porter's Diamond . The end of this chapter indicates the importance of assessing clusters and their positioning , as well as the steps they must take in achieving excellence .

Chapter 5 entitled, "*Ensuring excellence in the cluster management. Case study iTech Transylvania* "is the most complex part of the thesis, which assesses and analyzes the process of ensuring excellence in the management cluster in IT, based on a case study for a cluster, which has as main activity "human resources training in advanced technologies." We explore all life cycle stages of a cluster, from market research to see if there is critical mass to create this type of structure to exploratory meetings between prospective participants to a cluster and ultimately to the establishment of the cluster.We emphasize the fact that once the cluster is established, all activity should focus on the construction of the visual identity, on the relationship with internal and external environment, on developing the vision and mission of the goals to be achieved within the cluster and on the actions undertaken.

The cluster chosen for the case study, obtained both Bronze and Silver certification, which meant it could focus on carrying out concrete actions for the benefit of its members and the promotion and internationalization for both the cluster as an organization and for its members. All these, in our view, are important steps taken so as to ensure excellence in cluster management and its alignment with the best clusters at European level.

The objective of this research is to develop a model for assessing and analyzing management cluster, on the basis of knowledge management, considered a driver of innovation in SMEs for members of the cluster, to identify and implement the best practices in order to ensure excellence in cluster management for IT. Among the specific objectives pursued in the empirical study, the most important can be summarized as: identifying links between clusters and innovation management; identifying how and where cluster management organization can achieve the level of excellence in cluster management, based on a case study in the cluster chosen for the study. Also, there was an analysis of knowledge management in SMEs members of the cluster to optimize knowledge flow. We believe that the empirical study or analysis carried out allowed us to make a series of proposals and recommendations to ensure excellence in the management of the cluster which was the subject of the study, taken as a model for research by identifying good practices, with the important support knowledge management.

In Chapter 6, "Final Conclusions and Personal Contributions", we briefly presented the conclusions of the research and the main ways of targeting cluster management excellence.

### 4. Final conclusions

The research aimed to present a comprehensive theoretical approach of cluster management, having it's foundation on knowledge management, identifying the factors influencing efficacity and efficiency of the development strategies and politic programmes in ICT field in the knowledge society. The whole study was based on a n adequate Bibliography for the research theme and the study of concepts referring to cluster management and showcasing the results of different studies published on this topic, but also of the evaluation reports made by national and European bodies in IT field.

The result from the reasearch showed that the most successful companies choose to be part of a cluster organisation, for representation in the dialogue with local, national and international authorities, but also to identify new cooperation paths with the other players on the market, at national and international level. The benefits of collaboration are begining to be much more appreciated, rather than the fear of indutrial spying and un-loyal competition. We consider that the study is welcome, seeing the fact that Cluj, through it's economic and social potential can meet a great development of the ITC sector by continuing the efforts of switching from outsourcing into new products and services creation.

The used analysing model of the cluster management has on it's foundation the requirements regarding cluster certification, the experience obtained at European level, studies in the field and our own experience, which allowed us to identify the best practices in cluster management and also the management of it's members, in the scope of efforts armonization for sustaining the competitivity and assuring excellence.

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