A COMPARISON OF CLUSTER MEMBERS AND NON CLUSTER MEMBERS IN TRANSITION ECONOMIES:

THE CASE OF BULGARIA, REPUBLIC OF MACEDONIA (FYROM) AND SERBIA

A thesis submitted for the degree of Doctor of Philosophy in the Faculty of Social Science

The University of Sheffield
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November 2014

Declaration

"I hereby declare that this submission is my own work and that, to the best of my knowledge, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text".

Aleksandar Karaev
January 2014

Acknowledgements

When I started PhD studies within the SEERC, I was aware about the complexity of the process, but could not expect that in certain stages more questions will appear than the answers could be provided. Now, when I am close to the end of this journey I remember the saying “What you get by reaching your destination is not nearly as important as what you will become by getting there". Therefore I would like to express my deepest gratitude to my supervisors Dr. Leslie Szamosi and Professor Lenny Koh, not only for helping me to reach the final destination, but also for improving my research and analytical skills, as well as increasing the standards of my academic work. Both of them were very demanding, but in the same time extremely supportive throughout the entire process. Their professional advices combined with their confidence in my work, provided me with necessary strength and motivation to keep working especially during the critical periods of this research. I owe them many thanks for providing alternative perspectives, stimulating new ideas and cannot imagine what the process would have been like without their support and generosity.

My appreciation goes also to the faculty and staff of SEERC for providing hospitable research environment, which was very important in spite of the fact that as a part time student I was spending very limited time at the University.

During the entire process, I am grateful to be employed by Deutche Gesselchaft fur Internationale Zusamenarbeit (GIZ), where my interest about clusters has been raised at first place. During my engagements in the projects Private Sector Promotion (PSP), Regional Economic Development of the Eastern part of Macedonia (REDEM) and now in Regional Economic Development (RED), I was able to combine my academic and professional background with practical experience. With a support of GIZ I had a great opportunity to attend various cluster conferences and organize and participate at study visits, where I was stimulated to further deepen my knowledge and insights about clusters and develop some of the ideas that are presented in this dissertation. A sincere appreciation also goes to my Team Leaders Joachim Goeske and Jens Adler, who have shown deep understanding about my research needs by generously providing me with leave of absence whenever needed.

I also wish to show my gratitude for the help and support received from all representatives of the surveyed companies, as to my colleagues who helped me with distributing and collecting the questionnaires.

My special tribute goes to my family, especially to my wife Marija, who besides professional assistance, has showed endless consideration, patience and unconditional support during the whole process. In the moments of doubts my oldest daughter Eva was constantly convincing me that I am not taking too much time from her and from my other three daughters – Lea, Marta and Mila. I cannot thank my family enough for their care.

January 14th, 2014, Skopje

Abstract

This research aims to determine the impact of the cluster approach on the competitiveness of cluster members in clusters in transition countries. The project focuses on cases in Bulgaria, Republic of Macedonia (FYROM) and Serbia. The study provides a critical review of the cluster literature, which then leads to data analysis, deriving conclusions and providing recommendations based on the findings from the research.

Aiming at building on strengths and compensating for weaknesses of both approaches, the mixed method research, using both quantitative and qualitative research methodologies was used, based on deductive research approach. In addition to descriptive statistics, one-way analysis of variance (ANOVA), post hoc analysis, factor analysis and regression analysis were used as main statistical tools for answering the research questions.

The main findings are that cluster phenomenon in selected countries in South East Europe is very different from the one in industrialized countries and there is no statistical evidence that clusters contribute to improving the competitiveness of the cluster members. On the other hand the companies which are not involved in cluster initiatives, do not see any disadvantage as a result of "being out of the game". Furthermore, cluster members in the selected countries have received only limited additional benefits which are not accessible to the non-members. The main benefit that cluster members in selected countries receive is access to information, business partners and business supporting organisations, but those benefits have not resulted in an increase of their competitiveness.

One of the key contributions of this research is that for the first time it provides evidence about the influence of clusters on competitiveness of the cluster members in transition economies in the South East Europe. There is also no other study in this part of Europe that compares the business performance of cluster members to non-members.

Publications associated with this thesis

Karaev, A., Stojkov, G., Goeske, J., Shutoski, H. (2008) – "From a pilot, to an all-inclusive effort" – *Conference paper International Conference for Entrepreneurship, Innovation and Regional Development - ICEIRD*: May, 2008, Skopje/Ohrid, Republic of Macedonia

Karaev, A., Koh, S.C.L., Szamosi, L. (2007) - "The cluster approach and SME competitiveness: A Review" - *Journal of Manufacturing Technology Management* Vol. 18 Issue 7, pp.818 – 835

Karaev, A., Koh, S.C.L., Szamosi, L. (2006) - "Could a Cluster Approach Really Improve the Competitiveness of SMEs ?", *In a proceedings of the 4th International Conference on Supply Chain Management & Information Systems (SCMIS),* 5-7 July 2006, Taipei, Taiwan

Karaev, A., Koh, S.C.L., Szamosi, L. (2006) – "Outsourcing as a Business Strategy in Industrial Clusters: The Case of IT Cluster in the Republic of Macedonia (FYROM) "*Supply Chain Management & Information Systems Handbook: Supply Chain Management and Logistic in South East Europe*, SEERC, Thessalonica, Greece, p. 81, ISBN 960-87869-6-7

Karaev, A., Will, M. (2005) - "Training of Cluster Managers" In *proceedings of the the National Conference for Economic Development and Entrepreneurship*, 2-4 June 2005, Sibenik, Croatia,

Karaev, A., (2004) - "Clusters in Republic of Macedonia (FYROM): Obstacles for Cooperative Behavior*" Conference European Day of Entrepreneurship Fostering Social Cohesion Through Social Entrepreneurship"*, Zagreb, October 5-6, 2004 UMIS – SMEA Small and Medium Entrepreneurs' Association of Croatia

Karaev, A., Kehaghias, S., Koh, S.C.L., (2004) - "The Use of Cluster Approach in Improving the Competitiveness of Manufacturing SMEs" "In *proceedings of the International Conference Manufacturing Management in 21st Century*, 16-17 September 2004, Ohrid.

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Nomenclature

ABC	Association of Business Clusters
AC Serbia	Automotive Cluster Serbia
APERM	Agency for Promotion of Entrepreneurship of Republic of Macedonia
EU	European Union
EUR	Euro
FACTS	Fashion Apparel Cluster Serbia
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GVA	Gross Value Added
ICHE	Italian Institute for Foreign Trade
ID	Industrial District
IPA	Instrument for Pre-accession Assistance
MASIT	Macedonian Association for Information Technology
MEET	MEET – Ministry of Economy, Energy and Tourism
MERD	Ministry of Economy and Regional Development

MLS	Ministry of Local Self-Government
MoE	Ministry of Economy
OECD	Organization for Economic Cooperation and Development
PPP	Purchasing Power Parity
SBA	Small Business Act
SECEP	Support of Enterprise Competitiveness and Export Promotion
SEE	South Eastern Europe
SMEs	Small and Medium-sized Enterprises
TTA-TC	Textile Trade Association – Textile Cluster
UCC	Union of Chambers of Commerce
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

Chapter 1

1. Introduction

In the last few years trade liberalization and globalization processes have significantly increased customer expectations and competition between companies. In order to survive the transition period and to respond to the challenges of the globalization process, SMEs in transition countries have been faced with two main challenges: (i), to increase their individual competitiveness, and (ii), due to their limited size, to take advantage of synergy effects created by entering into cooperative relations with other SMEs and related partner institutions (Schwanitz, et al., 2002).

Clusters are today an important part of Europe's economic reality. According to the Europe 2020 Strategy clusters are important element for improving the business environment, especially for SMEs. The EU identified strengthening clusters as one of the nine strategic priorities for successful promotion of innovation. Especially important step for cluster development was signing of the European Cluster Memorandum in January 2008, and launching the European Charter Observatory in 2007, which has identified around 2000 statistically significant clusters defined as regional agglomerations of co-located industries and services (European Commission, 2008). While fully accepting the market-driven nature of clusters, since the early 1980s, public authorities responsible for economic development have used cohesion policy instruments to develop innovation strategies including the nurturing of clusters. The Community Strategic Guidelines on Cohesion (CSGs) adopted by the Council on 6th October 2006 for the period 2007-2013 explicitly encourage Member States and regions to promote strong clusters as part of their economic reform strategies. (European Commission, 2008).

At the same time, macro level governmental policy has been trying to improve the competitiveness of the national economies through creating favourable framework conditions for economic activity and promoting various instruments for SME

development. Following the positive experiences from industrialized countries, over the last few years clusters have been widely used as instruments for promoting economic growth in transition countries as well (OECD, 2005). While the clustering concept has proved as an efficient tool for economic development in many developed countries, its applicability for improving the competitiveness of SMEs in transition countries will be further examined.

Clusters and the broader patterns of economic specialization across geographies have become an important concern for European policy makers. One motivation is the set of ambitious goals on productivity growth and innovation that European leaders have defined for the EU in the Lisbon agenda and the second one is the impact of globalization on the nature of competition between regions (Ketels and Soelvel, 2006). In 2011, the European Commission has presented a new strategy to promote world-class clusters in Europe. This initiative stems directly from the Communication on an integrated industrial policy for Globalization Era (Europe INNOVA Annual Report, 2010).

According to the literature, clusters have been found to contribute toward improving SME performance and increasing the competitiveness of certain geographical regions and even nations (Porter, 1990; Andersson et al, 2004). For the time being, no in-depth evaluation of performance of cluster initiatives in transition economies has been made, and there is no scientific evidence that clusters influence the economic performance of participating SMEs in those countries. It is not clear if companies are creating competitive advantage as a result of being cluster members or if they see clusters merely as an opportunity for improving their corporate image and as a tool for having access to financial support from donor organisations. While many different methods and techniques have been proposed in the literature there is no standardized approach for the time being (Cassidy et al., 2005). Few evaluations of performance of existing cluster initiatives have been done at the request of international donor organisations, which are main designers and promoters of cluster policies in transition countries (MoE, 2005). Such approaches might influence the objectivity of a research, due to the fact that those evaluations are done more from a perspective of measuring the accomplishments of a particular cluster project performed in a certain period, without taking into consideration the longer term impact.

1.1 Scope of the study

For the purpose of this study, three of the transition countries have been selected, namely Republic of Macedonia (FYROM), Bulgaria and Serbia, in which companies in each country have been analyzed separately and in their totality. As defined by the European Bank for Reconstruction and Development, transition economies are those economies that are switching from a planned to a market economy (EBRD, 1994). Ketels et al. (2006) also classifies Bulgaria, Republic of Macedonia (FYROM) and Serbia as transition economies and provide evidence that there are considerable differences between developing and transition economies, arguing that transition economies are typically somewhere between developed and advanced. Justification for selecting the countries will follow. This research has built on experience and knowledge gained through working for the German Organization for International Cooperation (GIZ), where the potential for cluster based development strategies has been examined and measures for cluster policy have been proposed. In the last decade GIZ have implemented numerous projects in the field of economic development in South Eastern Europe. The researcher has been employed by GIZ since December 2000 and has received significant assistance for this research from the existing structure of GIZ offices in the region. The selected countries are going through the transformation of their economies from centrally planned to market economies and in the beginning of the research all of them shared the same goal of becoming EU members.

Bulgaria has become an EU member as from 1 January 2007 (Presidency Conclusions of the Brussels European Council, 2004). The Republic of Macedonia (FYROM) has signed the Stabilization and Association Agreements (SAA), which entered in force in 2004 and after receiving positive opinion from EU Commission in December 2005, gained a candidate status. In October 2009, the EU Commission gave recommendations to the Council to open negotiations with the country and to move to the second phase of SAA Implementation. These recommendations were reiterated in 2010, 2011, 2012 and 2013. Serbia was granted a candidate status on 1st of March 2012, following a recommendation by the General Affairs Council on 28 February.

Given the conclusions from the latest assessment of the progress towards meeting the economic criteria for EU accession (EU Commission, 2013), which state that Republic of Macedonia (FYROM) should be able to cope with competitive pressures and market forces within the Union in the medium term only, and Serbia needs to make significant efforts in restructuring its economy so as to cope in the medium-term with the competitive pressures and market forces within the Union, it is evident that both countries cannot expect to become full EU members over the next few years. The initial assumption was that those firms participating in the clusters development projects would benefit from agglomeration effects, as described in the literature. Cluster participants from all three countries were analysed, to enable a comparison of the influence of clusters on their competitiveness and to find out if there is a similar pattern in the behaviour of SMEs in the selected business environments.

The research is derived from the current literature and reality gaps and contributes towards increasing the understanding of the cluster phenomenon in the selected transition countries. The clusters have been widely researched in various studies, and the transition countries try to apply positive experiences from developing ones, with significant assistance from international organisations; however, due to its relatively recent implementation, cluster impacts are still waiting to be widely recognised. The research has been started from the gaps in the literature and the current situation in the economic reality of the selected countries characterized with limited awareness about the benefits for SMEs, which are participating in the "cluster game". Geographical proximity and a lack of language barriers have been positive factors for conducting the research herein.

Cluster policy is an integral part of the economic policy and therefore before further examining the impact of clusters on competitiveness of SMEs in the transition countries, view of their economic context is needed. Table 1.1 presents the main economic indicators for Republic of Macedonia (FYROM), Bulgaria and Serbia and Montenegro for the 2010-2012, to show the comparison of the level of economic development of the selected countries in SEE. The different level of economic development should be taken into consideration, when transferring the experience and applying cluster concepts that have proven to be successful in developed countries.

Table 1.1 Main economic indicators in selected transition countries

Main Economic Indicators	Republic of Macedonia (FYROM)			Bulgaria			Serbia		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
Population, 1000 persons	2055	2059	2061	7534	7348	7305	7291	7160	7130
GDP real change in %	2.9	2.8	-0.4	0.4	1.8	0.8	1.0	1.6	-1.7
GDP per capita, EUR at PPP	8700	8900	9000	10700	11600	12100	8500	8800	9100
Gross monthly wages, avg. EUR	491	497	498	331	351	397	461	517	508
Consumer prices, % p.a.	1.6	3.9	3.3	3.0	3.4	2.4	6.8	11.0	7.8
Unemployment rat - LFS, %	32.0	31.4	31.0	10.2	11.2	12.3	19.2	23.0	23.9
FDI inflow, EUR mn	160	337	72	1152	1330	1480	1003	1949	274
Gross external debt in % of GDP	58.2	64.9	69.4	102.7	94.3	94.9	84.9	76.7	85.8

Source: Vienna Institute for International Studies (2013) www.wiiw.ac.at

Although the selected countries made some steps forward in the process of market-oriented reforms and in approaching EU standards, further progress is still needed, however, to establish an attractive framework conducive to investment and sustainable growth, driven by private sector development (Broadman et al., 2004).

1.2 Contribution to knowledge

Although there is an abundance of literature about cluster related issues, most of it cover the experiences in already developed countries where clusters have already showed some positive effects. Part of the literature addresses the cluster concept in developing countries as well, but more from the aspect of creating cluster support policies, which are supposed to bring future results; however, it would be too unrealistic to expect immediate positive effects from clusters in the transition countries, because in most of them the cluster related policies were introduced recently. In spite of the fact that some of the initiators of such

policies claim that clusters have already contributed to the economic growth in transition countries, in practice it takes more time for cluster effects to become evident – either positive or negative.

Another literature gap is that, although the competitiveness of clusters and its cluster members has been widely researched, the literature does not cover the competitiveness of companies that have not chosen participation in clusters as their business strategy, so called non-cluster members. It is not confirmed yet if the SMEs are facing any disadvantages by deciding to stay out of the particular cluster or if there is any type of 'knock-on' effect. Contrary to the industrialized countries where being a cluster member is simply a matter of being present in a certain geographical location or tradition, in the transition countries becoming a cluster member is a matter of a making a business decision, based on variety of reasons and expectations of SMEs. The research tried to find out if the expectations of cluster members have been met. By analyzing the empirical evidence and interactions of the cluster participants in the selected countries this research contributes in filling these literature gaps of measuring the benefits produced by clusters and exploring if becoming a cluster member makes a difference for SMEs. The research adds academic value in the context of expanding the knowledge of impact of clusters on economic development in transition and provides an input for further discussions about the correlation between clusters and competitiveness. In addition the links between the necessary preconditions for cluster development, cluster benefits and competitiveness of the cluster members are presented in a conceptual Cluster model, which contributes to filling the research gaps identified within the existing body of knowledge.

1.3 Aims and objectives of the study

This research aims at examining if the cluster approach contributes towards improving the competitiveness of SMEs in South East European (SEE) countries, namely Bulgaria, Republic of Macedonia (FYROM) and Serbia. The rationale for choosing these countries will be explained later. The objectives of the study are the following:

- defining the preconditions for cluster formation

- identifying benefits of cluster participation
- identifying disadvantages of non-members
- determining indicators for competitiveness of cluster members
- explaining the relationship between cluster participation and competitiveness indicators
- comparing the performance of cluster members and non-members
- creating a conceptual model of cluster contribution towards increasing competitiveness of SMEs - cluster members
- examining the effectiveness of cluster policy measures

1.4 Research Questions

The research has been conducted from the perspective of key cluster actors – SMEs, who are supposed to be main beneficiaries from cluster organizations. It was focusing on the following questions:

- Whether the existing cluster initiatives in selected transition countries in SEE are producing additional benefits which are not accessible to non-cluster members?

- Whether the existing cluster initiatives in selected transition countries in SEE are contributing towards increasing the competitiveness of participating SMEs?

- Do cluster support programs and projects, implemented by international donor organizations produce effective results for the cluster members?

The research has investigated how cluster participants are performing in relation to non-cluster ones and has made comparisons of performance of the companies between the countries. The research has also compared the satisfaction of companies from different cluster assistance projects implemented by international organisations.

1.5 Research methods and research outline

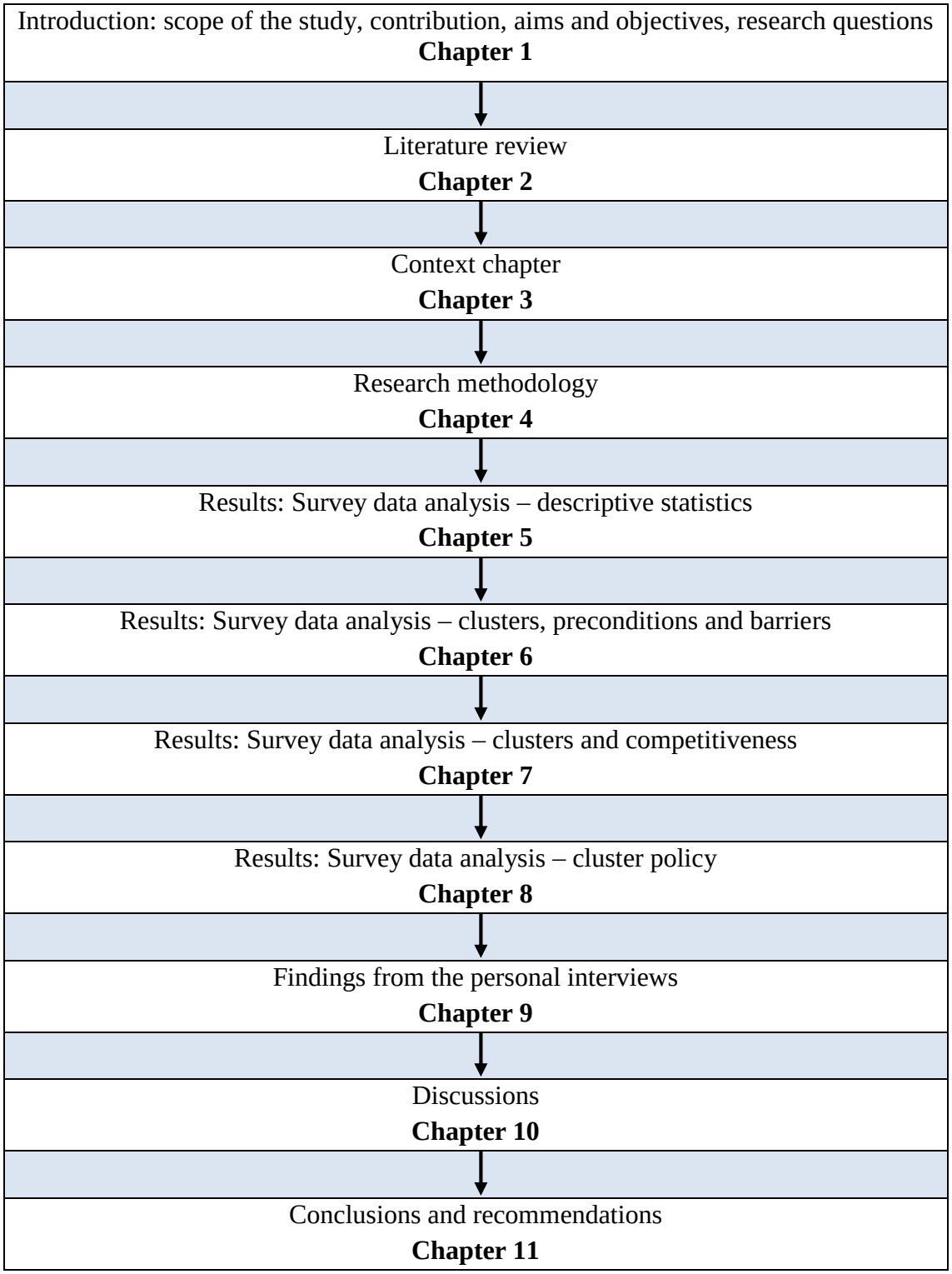
Aiming at building on strengths and compensating for weaknesses of both approaches, both quantitative and qualitative research methodologies were used for this study. A quantitative research methodology and survey-based research allow broad range of data to be generated, across a large sample of SMEs of both, cluster members and non-members in the selected countries. It allows a comparative analysis to be conducted between cluster and non-members, as well as between the selected countries. On the other hand, due to the complexity of the social environment in all three countries, the qualitative research methodology was used as well. Both research methodologies were based on deductive research approach.

After developing theoretical framework based on the review of the existing literature, a questionnaire was selected as a main tool for collecting the data. For designing the questionnaire the starting point were the findings from the literature review, but in order to verify the applicability of findings in the selected countries, a telephone interview was used as an additional instrument. The telephone interviews were conducted with both cluster members and non-members. This was followed by broad survey, which allowed larger number of SMEs, to be reached enabling generalization of the research.

Then, additional semi-structured personal interviews with some of the respondents of the questionnaire survey were carried out to confirm the findings from the questionnaire and eventually to obtain additional, qualitative data for investigating how different factors influence cluster performance. Personal interviews were conducted with a cluster sample of the selected companies, both cluster members and non-members. In addition to descriptive statistics, one-way analysis of variance (ANOVA), post hoc analysis, factor analysis and regression analysis were used as main statistical tools for answering the research questions.

This thesis is organized in eleven chapters and follows the structure presented in the Figure 1.1.

Figure 1.1: Structure of the thesis



Chapter 1 provides an introduction to the issues explored with this research. After explaining the scope of the research, significance and contribution to the knowledge, the

aims and objectives are presented. The research questions describe the focus of this research, in particular with regard to the influence of cluster in increasing of competitiveness of participating SMEs. The introduction also sets the context for the next chapter in which literature is reviewed.

Chapter 2 first looks at conceptual findings about the cluster approach based on a review of the existing literature. After comparing various definitions, the chapter continues with covering the issues which are preconditions for cluster development such as geographical proximity, entrepreneurial environment, networking and the existence of certain level of trust. Since the focus of this research is to examine the potential influence of clusters for SME competitiveness, this relationship is examined in a separate section, as a base for discussion about indicators for measuring economic performance of cluster members. In addition, the inter-links between clusters and specialization and innovation will be reviewed. This is followed by discussions on cluster approach as an instrument of economic policy. After presenting the literature gaps in the summary section, a hypothetical cluster model will be presented, based on the literature review.

Chapter 3 describes the economic context of the selected countries, where cluster policies have been implemented, as a base for comparative analysis on clusters, first looking at the different definitions of SME as key drivers of cluster development. After presenting the main challenges of the transition process in the SEE, a review of the socio-economic characteristics of each country is provided, including how those characteristics have changed over time. This is followed by an overview of policies for entrepreneurship promotion and clusters development in each of the selected transition economies, including short description of clusters which have been involved in this research.

Chapter 4 first focuses on research philosophy which helps researchers identify once own ontological and epistemological orientation. After explaining why the combination of critical realism and pragmatism philosophy has been adopted, the chapter continues with describing the research methodology and design, concentrating on both, quantitative and qualitative aspect. In the sub-section of research approach the structure of the research process is presented. It is followed by rationalisation of the chosen data collection techniques as well as methods for analysis of the obtained data. Description of the process

of questionnaire development and overview of sample size and response rate was followed by explanation of the main statistical tools that have been used for survey data. Then the process of using interviews, as a qualitative method that complemented survey was presented, before presenting the section on reliability and validity.

Chapter 5 presents the findings from the descriptive statistics as a part of the quantitative data analysis. The frequencies have been analysed for the first part of the survey questionnaire - section A, which covers general information about the surveyed companies and consists of twelve questions. The frequencies for all questions under section A have been analysed based on the following categories:

- All SMEs in all three countries (both cluster members and non-members)
- Cluster members vs. non-members
- Comparison between countries

At the end of the chapter an overview of the results from regression analysis of the section A is provided.

Chapter 6 looks at analysis of the questions B from the survey questionnaire, by using one-way analysis of variance (ANOVA). The section B covers three questions related to preconditions and barriers for cluster formation and cooperation within the cluster, following the similar structure as in the descriptive analysis. The results of ANOVA analysis are presented in a summarized table for each of the questions. Additionally factor analysis has been conducted for the questions with more than two alternatives. It was conducted for all countries, as well as for each of the selected countries separately, but will be presented in Appendix only (Appendix C), since it does not directly contribute to answering research questions. The chapter ends with a summary of results of the regression analysis conducted for the survey questions under the section B.

Chapter 7 provides an overview of the analysis of the section C from the survey questionnaire, by using one-way analysis of variance (ANOVA). The section C consists of eight questions mainly focusing on exploring the inter-linkages between clusters and competitiveness. The first question deals with eventual benefits that cluster members receive as a result of participating in clusters, which is followed by examining the

constraints performance of companies. After presenting the relationship between clusters and access to resources, especially with regard to suppliers and finance, the chapter continues with measuring of business performance and reviewing the competitiveness indicators of cluster members and non- members. At the end of the chapter the results from regression analysis of the section C are presented.

Chapter 8 presents the results from the section D, by using one-way analysis of variance (ANOVA) and following the same structure as in the previous chapters. The section D focuses on cluster support policy, starting with determining the level of familiarity with cluster support programs and awareness about the available support offered by the cluster support institutions. This is followed by sections related to implementation of cluster support policy and effectiveness of international cluster support organizations. The chapter ends with an overview of the results of the regression analysis of the session D.

Chapter 9 presents the findings from the personal semi-structured interviews, which were conducted after survey questionnaires have been collected. The personal semi-structured interviews were conducted with sixty representatives of the surveyed companies (thirty members and thirty non-members), twenty in each of the selected countries, and were aiming at validating the findings from questionnaires. In addition the interviewees were also given opportunity to address some issues from the survey questionnaire that required further clarification and add anything regarding clusters and cluster development within their country, which was not covered in the questionnaire.

Chapter 10 starts with discussions on findings from the analysis and is based on synthesis of the issues arising from the literature review, survey questionnaire and interview results. The discussions will be divided in three subdivisions – Clusters – preconditions and benefits, Clusters and competitiveness and Cluster policy. Each of the subdivisions will follow the similar structure as in the previous chapters, describing the relations between:

- Cluster members vs. non-members in all three countries
- Cluster members vs. non-members by country
- The selected countries

Chapter 11 presents the final conclusions and recommendations based on the findings from the previous chapters starting with direct responses on each of the research questions. The responses of the research questions are elaborated in more details under the section of research results and implications, which is followed by discussion on novelty and main contributions from the academic point of view. In addition main contributions are examined from the aspect of benefits for the cluster practitioners, policy makers and companies. After discussion about the limitations of the research and the research methodology, recommendations for further researches are provided. Concluding remarks are presented at the end of the chapter.

1.6 Summary

Republic of Macedonia (FYROM), Bulgaria and Serbia are the transition countries from SEE that have been selected for this research. Cluster members and non-members in each country have been analyzed separately and in their totality. Having in mind their current economic situation, and their lagging behind the industrialized countries, the selected transition countries have to significantly improve their economic performance, if they want to catch up with the EU member countries. Developing a cluster approach might be an efficient tool for boosting economic development, but it is important to take their specific characteristics and existing economic conditions into account when designing and implementing cluster based policies. Combination of comparative analysis of foreign experiences and permanent monitoring of the current economic performance will enable creation of specific customized cluster policy, which would aim at building on indigenous advantages and compensating of disadvantages in the selected countries. Due to the data shortages, evaluating cluster policies in these countries requires additional effort and commitment and therefore field research and direct contact to the SMEs, which are the final beneficiaries of cluster policies and main drivers of the regional and national economies, is needed.

Chapter 2

2 Literature Review

This chapter will first look at conceptual findings about the cluster approach based on a review of the existing literature. The literature provides evidence about differences not only about understanding of main concepts of clusters, but also there are contradicting perceptions about the implementation of cluster initiatives and their impact on economic development. After comparing various cluster definitions, the chapter continues with covering the issues which are preconditions for cluster development such as geographical proximity, entrepreneurial environment, networking and the existence of certain level of trust. In addition, the relationship between clusters and specialization and innovation will be examined. Both, specialization and innovation contribute to strengthening the circle, creating even better preconditions for further development of a cluster. This is followed by discussions on cluster approach as an instrument of economic policy. After presenting the literature gaps, in the summary section a hypothetical cluster model will be presented, based on the literature review.

2.1 Cluster approach and definitions

In the last decade, clusters were widely recognized as one of the ways of overcoming size limitations of companies and as an important instrument for improving their productivity, innovativeness and their overall competitiveness (Camisón, 2003). Numerous studies have been conducted in various countries and many of them do not share a common understanding about the cluster concept. According to one of the most prominent authorities in the field of cluster approach, Porter (1990), national clusters are formed by firms and industries linked through vertical (buyer/ supplier) or horizontal (common customers, technology etc.) relationships, with the main players located in a single nation/state. Porter (1998) later expanded this definition by including institutions (formal organizations) such as universities. Geographical proximity facilitates the transmission of knowledge and the development of institutions which, in turn, may enhance cluster effectiveness. According to Porter's view, clustering can encourage an enhanced division of labour among firms with physical proximity among numerous competing producers, encouraging innovation.

Rosenfeld (1997) supports that clusters refer to geographically bounded concentrations of interdependent firms and he adds that they should have active channels for business transactions, dialogue and communication. He argues that without active channels, even a critical mass of related firms is not a local production or social system, and therefore does not operate as a cluster. Geographical concentration was not underlined in the definition provided by the USAID's project in Republic of Macedonia (FYROM), Macedonian Competitiveness Activity (MCA), which determines clusters as inter-related firms and other institutions that drive the competitiveness of a given industry. Clusters consist of private enterprises of various sizes including producers, suppliers, and customers, plus labor, government, professional associations, and academic, research or training institutes. (USAID/MCA, 2004)

When using the term cluster, The United Nations International Development Organization (UNIDO) understands sectoral and geographical concentrations of enterprises that produce and sell a range of related or complementary products and, face common challenges and opportunities. These concentrations give rise to external economies such as the emergence of specialized suppliers of raw materials and components or growth of a pool of sector-specific skills and as a result can foster development of specialized services in technical, managerial and financial matters (UNIDO, 2000).

The definition provided by OECD (2005) Programme for Local Economic and Employment Development (LEED), goes in the same line defining clusters as an agglomeration of vertically and/or horizontally linked enterprises operating in the same business field in conjunction with supporting institutions. According to Ozawa (2003), in Japan two types of clusters can be distinguished; first, the localized industrial communities of the traditional type (so-called jiba-sangyo), where SMEs link to each other as industrial clusters and second, the geographically concentrated industrial agglomerations (sangyo-shuseki), where SMEs get together to support each other in a new industrial activity or around a large-sized enterprise as input suppliers, or around an academic community (universities and research institutions).

The cluster approach is very close to the concept of industrial districts in Italy. The main difference between industrial districts and the cluster approach is that the first is more input oriented, securing geographically available inputs for production, and the second is based on generating optimal competitive conditions for firms (Preissl and Solimene, 2003). Pouder and St. John (1996) are describing clusters and their characteristics, using a term *hot spots*. He defines them as "regional clusters of firms that (a) compete in the same industry, (b) begin as one or several start-up firms that, as a group, grow more rapidly than other industry participants (sales and employment levels), and (c) have the same or very similar immobile physical resource requirements in the long run" (p.3).

There are different views in the literature about determining which factors are prerequisites for cluster development and which of them have been produced as a result of the clustering process. Brenner and Mühlig (2013) distinguish between three types of preconditions: prerequisites - all local factors and resources given in a region when a local cluster emerges, triggering events that are taken to trigger a development in the region (promoting activities, specific policy measures, historical events, specific innovations, etc.) And self-augmenting processes defined as the underlying mechanisms responsible for the existence of local clusters.

Gallo and Moehring (2002) suggested that the geographical proximity of markets and suppliers, the existence of a pool of specialized labour, the presence of input equipment, the availability of specific natural resources and infrastructure, low transaction costs due to geographic proximity among actors, and access to information are required for the creation of clusters. According to them clusters naturally form as a result of a perceived common interest of its members and the stakeholders are SMEs, business associations, local and regional governments, business service providers and supporting institutions and each participant in the process of cluster development needs to identify, articulate and realize its own role.

Comparing clusters is a complex task, due to their high diversity, with regard to the geographical scope, industrial sectors, economic size and significance, etc. One of the

factors that complicate comparisons between clusters is their varying geographical coverage. Some regional clusters are greater in size and population than national clusters in smaller countries. Porter (1998) suggested that a cluster's boundaries depend mainly on the linkages between cluster participants and complementarities across industries and institutions that are most important to competition. Cluster boundaries do not necessarily comply with political ones and can cover a cross-border area. Examples of cluster approaches are offered both from regions focusing on "traditional products", such as furniture, ceramics and food (Northern Italy), and from regions with predominant high tech products (Silicon Valley). Cluster based economic development has proven highly successful, in both smaller and larger EU countries.

Many successful case studies indicate that the coordination of economic activities - depending on the intensity of cooperation in the form of clusters – can also strengthen the competitiveness of national economies in particular (Hernández-Rodríguez and Montalvo-Corzo, 2012). A good example is so-called "The Chair triangle" in the Udine Region and Friuli Venetia Giulia in Northern Italy, which produces 80% of total Italian chair product and 50% of total European production. It covers an area of 100km^2, on which 1200 companies are concentrated with 15.000 employees and annual turnover of 2, 5 billion Euros. (OECD, Conference documents, East West Cluster Conference, 2002).

The cluster concept has frequently been criticized for being definition vise vague, mainly because of the lack of clear boundaries, both industrial and geographical. (Martin and Sunley, 2003, Perry 2010). Martin and Sunley (2003) believe that Porter's definition on industry clusters is so vague in term of geographical scale and internal socio-economic dynamics that it has led to many different interpretations of this concept. They claim that, Porter's concept of industry clusters has stirred most of the confusions regarding the term "geographical proximity" in the formation, performance, and identification of clusters. For them it is unclear how Porter (1999) limits his term of geographical proximity in industry clusters and he cannot prove that anywhere or anything he asserts to be a cluster actually is one. All that can be said from location quotient data is that there is a higher than average specific industrial agglomeration in location x or y (Cooke, 2001). In his

critique to Porter's cluster theory, based on geographical proximity, Cooke (2001) goes in the same line:

> 'The geographic scope of a cluster can range from a single city or state to a country or even a network of neighbouring countries' (Porter, 1998, 199)

Van Dijk and Sverrisson (2003) argue in the same direction that the spatial connotations of the cluster concept are rather ambiguous. Given that clustering of enterprises is commonly held to mean that enterprises are physically close to each other and that this proximity creates opportunities for collaboration, other externalities, etc., they claim that proximity is not adequately defined since exactly how proximate firms need to be in order to constitute a cluster depends, on the context. Saxenian (1994) provides evidence that spatial clustering alone does not create mutually beneficial interdependencies, since an industrial system may be geographically agglomerated and yet have limited capacity for adaption.

Besides the geographical scope, further more various linkages between firms and industries create additional difficulties to define industry clusters. Martin and Sunley (2003) note that the linkages of firms "are both vertical (buying and selling chains), and horizontal (complementary products and services, the use of similar specialized inputs, technologies or institutions, and other linkages)." Similarly, Doeringer and Terka (1996) define clusters in terms of production channels that are "the chains of suppliers, manufacturers, and distributors that begin with basic inputs and end with the marketing of the final product." Hofe and Chen (2006) stress that fact that no consensus has emerged regarding a single coherent cluster definition and / or cluster methodology adds much to the confusion surrounding contemporary cluster analysis. Instead, cluster analysis appears to be a broad umbrella for a wide variety of similar, but nevertheless different concepts and methodologies. Doeringer and Terkla (1995) agree that, simply there is no single correct definition of an industrial cluster.

In addition to definition vagueness, the claims from the cluster literature that geographical concentration of industrial activities positively affects competitiveness have been questioned by several authors, who even argue that on a contrary, clustering may also be responsible for the loss of national or regional competitive advantage (Enright, 1995;

Glasmeier, 1994; Steiner, 1985). Townsend (1998) adds that localized clusters of economic activity, or 'agglomerations', have been overemphasized in economic geography since the mid-1980s. Martin and Sunley's (2003) position also contradicts with the theories that support positive correlation between clusters and regional economy (Camison, 2003, Gallo and Moehring, 2002). Their findings indicate that cluster concept cannot provide universal model on how agglomeration is related to regional and local economic growth. According to them the economic geographers and cluster analysts cannot be sure that geographical concentration is the main cause for economic growth of certain industries located in a various forms of geographical concentration.

Although in general there is a consensus about the existence of cluster benefits as Gordon and McCann (2000) put it, empirical observations of industrial clustering can be interpreted in quite different ways, depending on the observer's initial perspective, which can lead to rather generalised notions. Some authors are less optimistic about the evidence that businesses that are located in a cluster gain an advantage over those that do not (Malmberg and Power, 2003, Perry) and about the possibility of measuring the effects of different externalities. For example, Feldman (2000) notes that the results of researches typically vary from negative to positive externalities, Nefke et al (2008) argue that companies benefit from some type but not from every type of externalities and Potter and Watts (2011) claim that the impact of different types of externalities seems to change with the development phase of the industry. Baptista and Swann (1998) provide evidence that congestion effects created as a result of geographical concentration outweigh any benefits that may come from diversification within clusters (Baptista and Swann, 1998).

With regard to the cluster policy Bergman and Feser (1999) mention that while this theory may seem plausible to be implemented in developed economies, it is difficult to concentrate resources on key industries in less developed countries, due to the lack of sufficient infrastructures in the region. The provision of good infrastructures is essential in industry clusters. As Rosenfeld (1995) and Bergmand and Feser (1999) argue, as industry concentration increases, individual businesses benefit from the development of sophisticated institutional and physical infrastructures tailored to the needs of specific industry.

According to Grabher (1993) the highly developed and specialized infrastructure, the close inter-firm linkages, and strong political support by regional institutions may turn into stubborn obstacles to innovation', what he calls the `rigid specialization' trap. Negative effect of industrial agglomeration can appear in a form of political lock in, which Grabher (1993) defines as thick institutional tissues aimed at preserving existing traditional industrial structures and therefore unnecessarily slowing down industrial restructuring and indirectly hampering the development of indigenous potential and creativity. As he puts in, clusters must be expected to display the negativities of asymmetric knowledge, as when they are said to be prone to problems of 'lock-in' due to inadequate attention to external shifts, changes or threats from market processes.

Maskell and Malmberg (1999) stress the negative agglomeration effect in cases where formerly significant institutions hinder the economic development. According to them the learning region can be considered the one which focus on overcoming and avoiding political lock-ins in old industrial areas (Hassink, 2001, Morgan, 1997). The learning ability and regional resilience of regional actors contributes to understanding of regional economic adaptability and might explain why in some regions collective tacit knowledge can turn from strength into a weakness (path dependence), a feature which has been neglected to a large extent by the industrial district, innovative milieus, and production cluster models (Hassink, 1997, Hassink 2010).

In spite of the cluster criticism, the positive and negative effects of industrial agglomeration show the importance of studying and understanding this phenomenon in economic geography (Saxenian, 1994). However, any comparative study on clusters should take these differences in serious consideration, especially in the transition countries in SEE, where due to the specific economic, social and historical factors the role of clusters with regard to their influence on SME competitiveness deserve a special attention. In the following sections common characteristics of clusters will be described in order to provide conceptual base for further research in selected countries.

2.2 Territorial dimension of clusters

Although there are discussions whether clusters and clustering are primarily functional or indeed spatial phenomenon (Malmberg and Power, 2003), it has been recognized for a long time that related firms and industries tend to locate in certain geographical proximity. According to Rosenfeld (2002) clusters are geographically bound, defined largely by distances and times that people are willing to travel for employment and that employees and owners of companies consider reasonable for meeting and networking. Range is influenced by transportation systems and traffic but also by cultural identity, personal preferences, and family and social demands.

Wolter (2003) relates the geographical concentration with the agglomeration effects, underlining that the firms will concentrate in a location only if that agglomeration brings benefits to them, which are greater than the costs of locating in the area. He clearly distinguishes between geographical benefits and agglomeration economies, and relates the geographical benefits with a certain geographical location (e.g. specialized labour, infrastructure etc.), whereas agglomeration economies (benefits) describe how these and other factors are created by increasing the number of firms.

Proximity in geographic, cultural, and institutional terms allows special access, special relationships, better information, powerful incentives, and other advantages in productivity and productivity growth that are difficult to tap from a distance and a result, in a cluster, where the whole is greater than the sum of the parts (Porter, 2000). Geographical proximity influences the economic performance of the cluster, in a way that it creates competitive advantages to both SMEs, which closely cooperate and compete. Porter (1998) argues that a host of linkages among cluster members results in a whole greater than the sum of its parts. For example, in a tourism cluster, the quality of a visitor's experience depends not only on the appeal of the primary attraction but also on the quality and efficiency of complementary businesses such as hotels, restaurants, shopping outlets, and transportation facilities. Therefore, the same cluster companies, which compete locally, have to cooperate among themselves, in order to increase their collective performance.

The process of creating competitive advantage was described by Pouder and St. John (1996) as well, who indicate that competitors within the cluster benefit from agglomeration effects through gaining cost advantages and having access to resources that are not available to competitors not located in the cluster. Geographical proximity stimulates networking between firms, thereby facilitating imitation and improvement (Baptista, 2000) and contributes to developing additional financial benefits (Krugman, 1991) and technological externalities (Belleflamme et al, 2000). According to Krugman (1991), in the presence of imperfect competition and increasing returns, one firm's actions affect the demand for the product of another firm. Technological externalities are defined as those consequences of activity which influence the production function not directly through the market (Martin and Sunley, 1996).

Geographical proximity decreases the transaction costs (for example the costs of delivery) in that all stakeholders in a value chain and other related institutions are close to each other. The transportation costs are reduced due to the shorter distances, which by definition reduces the risks and therefore the insurance costs (Preissl and Solimene, 2003). They also found that costs for obtaining information could be significantly reduced due to easy access to information about cluster members and their specific competencies and reliability. In addition to decreasing the transport costs, firms belonging to clusters improve their competitiveness by exploiting some assets, such those involved by ad-hoc services, generated inside the district by the co-operation among firms (Nicolini, 2001, Navickas and Malakauskaité, 2009).

The concentration of more firms in an area initially decreases local costs because their presence leads to a greater emergence of providers of infrastructure, business services and so on, taking in consideration that in some cases congestion costs might occur since infrastructure and other local factors cannot grow without limits (Wolter, 2003). Heidi von Weltzien and Shankar (2011) give credit to clusters even at undertaking Corporate Social Responsibility (CSR) behaviour, since the cluster-related networks address the limitations faced by the SMEs when they try to implement CSR individually.

Pouder and St. John (1996) also support the position that clusters could emerge in the locations where there is specific infrastructure, enabling the participants to benefit from it. The infrastructure can encompass specialised training institutions, communal infrastructure, telecommunications, etc. At the same time, the developed infrastructure contributes to attracting new cluster members, willing to benefit from it. In many cases, the existence of a cluster also stimulates the formation of local support institutions oriented to the specific needs of the cluster participants. They also further stimulate and create specific infrastructure. Therefore, clusters often also include strategic alliances with universities, research institutes, suppliers of corporate services (brokers, consultants) and customers. Porter (1998) took account of this aspect with the determinant forms of specialization and networking.

Geographical dimension of clusters especially contributes to the strengthening of communication between cluster members and intensifying the creation of knowledge in a way that proximity helps to establish co-operative linkages between companies through exchange of information, enhancing mutual learning, and knowledge exchange (Bagella et al, 1998). Knowledge can "spill over" between local firms due to the easier (informal) contact between them (Wolter, 2003). However, according to de la Maza-y-Aramburu, et al. (2012), the clusters appear economically relevant because of their role of broker of knowledge and not because of a role as of generator (or co-generator) of knowledge. With regard to knowledge, four overarching issues dominate knowledge creation, transfer and adoption, namely: (1) motivation and reward mechanisms; (2) process management and evaluation; (3) clustering and brokerage; and (4) trust and bridge building (Lockett et al, 2008).

When knowledge is considered, Giuliani (2005) argues that firm specific characteristics are very important in the process of learning and innovation in the clusters. According to her when a cluster consists of firms with particularly weak knowledge bases, there is a big probability that inter cluster relations will not be able compensate the lack of capacities to both transfer and absorb knowledge. Some authors distinguish between architectural and component knowledge, which exists in clusters (Pinch et al, 2003). According to them the codified component knowledge is more easily spread than firm-

specific architectural knowledge. Architectural knowledge is also deeply embedded and widely dispersed within organizations, highly ambiguous in character, which make architectural knowledge difficult to transfer, while the component knowledge consists of codified elements which do not inhibit its dissemination among various organizations.

Besides the codified knowledge, which can be easily transferred through different communication media, clusters facilitate exchange of the informal or so-called tacit knowledge (Bergman and Feser 1999). It is exchanged rather accidentally because the senders and the receivers are not aware of its relevance before they are involved in the communication process. Preissl and Silimene (2003) commented that the random information is transformed into a meaningful context through such tacit knowledge. Since it constitutes part of the assets of cluster companies, tacit knowledge is bound to geographic locations. The exchange of tacit knowledge, which is assumed to be essential for innovations, requires spatial proximity because, of easy articulation, which is best shared through face-to-face contacts (Boschma and Weterings, 2004). The second reason according to same author is that two companies and individuals located in the same region are more likely to have a background of similar behaviour, customs and traditions which eases the exchange of tacit knowledge. Tacit knowledge enhances trust between cluster members and together with trust represents the intangible assets of the cluster. Unlike financial and physical ones, according to Kaplan and Norton (2004), intangible assets are hard for competitors to imitate, which makes them a powerful source of sustainable competitive advantage. However, tacit knowledge and social capital can sometimes play a negative role, since it creates an entry barrier for companies outside the cluster - for example if crucial business information is available only for existing companies inside the cluster (Portes and Landolt, 1996, Zeng et al., 2010). The side effects of exchanging the tacit knowledge have been also identified by Staber (2009), who argues that the learning process can involve social biases which, in some cases, have the effect of reproducing a collective mindset built on distrust and rivalry.

The rapid advances in information and communication technologies tend to develop virtual links between SMEs, thus overcoming geographical borders prompting Preissl and Solimene (2003) to suggest that clusters do not necessarily have to be locally defined

entities. This requires a change of perspective where clusters are no longer seen as regionally bound constellations nurtured by regional economic systems but rather as "hubs" within a global system of flows of information, knowledge and economic activity (Damaskopoulus, et al., 2008). This is in line with findings of Brenner and Mühlig (2013), who argue that after 1970 the geographical location of a region is becoming less and less relevant for its economic development, which reflects the recent trend to globalisation.

Zaheer and Manrakhan (2001) also provided evidence to support the argument that the introduction of a business-to-business (B2B) trading network increases the global market participation of firms from peripheral countries, but does not appear to reduce the importance of locational clusters. In spite of the fact that in the age of Internet based technologies geographical proximity loses importance (Carncross, 1997) because of the easier access to information, Preissl and Solimene (2003) do not neglect the previously explained tacit knowledge. They suggest that this valuable non-codified, but tacit, knowledge can be exclusively obtained within a cluster. Data that are codified convey only half the story and this is partly why information and communication technologies (ICT) do not decrease the importance of geographically concentrated clusters (Andersson et al, 2004). The example of the software cluster of Bangalore (India), illustrates that in addition to "new economy" factors, spontaneous agglomeration advantages appear to be important alongside active collective efficiency.

A number of factors such as high demand for innovation, international technology transfer, low wages and strong technology and education institutions, are highly dependent on spatial proximity of firms, where cluster interactions takes place in a dynamic environment (Canie and Romijn 2003). Geographical proximity and informal communication and face-to-face contacts still matters (Storper and Venables 2002) and create competitive advantages, even though transportation and communication costs decline. According to them the face-to-face contact can be key precondition for many creative activities and is particularly important in environments where information is imperfect, rapidly changing, and not easily codified. Porter (2000) also indicates that although global sourcing mitigates disadvantages, it does not create advantages and moreover, distant sourcing normally is a second-best solution compared to accessing a

competitive local cluster in terms of productivity and innovation. He called it location paradox, since the most enduring competitive advantages in a global economy seem to be local. Porter (1998) argued that this is the reason why the odds of finding, for example, a world-class mutual fund company in Boston, or textile–related companies in North Carolina, or high – performance auto companies in southern Germany are much higher than in most any other place. Maine et al. (2010), however, found limited statistical support for the hypothesis that location in, or near, specialized clusters is positively related to growth performance, with exception of specific high tech industries, such as biotechnology.

In addition to geographical concentration, for intensity of agglomeration effect of the cluster, a density of existing SMEs, actors, resources, competences in a certain region is important, defined through critical mass (Andresson et al. 2004). Brenner and Fornahl (2002) define critical mass as a mass necessary for providing a basis for more intensive cooperation, better exploitation of the innovative potential, sustainable maintenance of its market position, etc. They argue that it is determined by the number of firms, the number of employees and other local conditions such as regional human capital, the presence of supporting services, and public research institutions. Since the critical mass is difficult to measure, cluster literature does not yet provide exact figures. There are only approximations based on mathematical approaches taking into account the firm population and factors such as the availability of human capital, services and research institutions, external conditions, market situation, the lifecycle of the respective industry and the strength of the self-reinforcing processes (Brenner and Fornahl 2002). Morgan (2007), agree that critical mass is a necessary precondition for cluster-based economic development but he suggests that by itself, it does not ensure a higher level of regional economic performance. Therefore for a certain region leveraging the potential of its concentrations of industry may matter more than simply having a critical mass of firms. (Morgan, 2007)

In spite of the rapid advances of information and communication technologies based on the evidence from the literature review, it can be concluded that proximity in geographic, cultural, and institutional terms, combined with existence of critical mass of companies

from certain industry, create favourable conditions for producing synergy effects and improving the economic performance of the cluster members in developed countries. For answering the research questions, in addition to examining to what extent clusters in the selected countries are established based on geographical proximity and existence of critical mass of companies of particular economic sector, providing evidence that those preconditions produce benefits for cluster members, that are not available for the non-members, will be of particular importance

2.3 Competitiveness and business performance indicators

The concept of clusters, as defined by Porter (1990), is always related to competitiveness, especially to the SME sector, as small and medium-sized enterprises may benefit from economies of scale and extend the operation limits (size-related limitations of operation are characteristic of most small businesses) (Navickas and Malakauskaité, 2009). The impact of clusters on competitiveness is stressed by Paniccia (2000), who argues that while there are discrepancies among different types of industrial districts, on average they achieve better static or dynamic economic performance than do non-industrial district areas. This was confirmed by Camison's (2003) findings, which indicate that a cluster creates benefits for cluster members that are not available for companies outside the cluster. According to Fisher and Reuben (2000) the most developed regions in both advanced and developing countries are the ones that share the characteristics of being home to successful industrial clusters. Hagen et al. (2012) provide evidence that cluster orientation and its consistency with business strategy leads to improved international performance of the cluster members.

In spite of all findings from the literature which support the fact that clusters bring positive effects to economy of geographical location, according to some authors there is a lack of substantive evidence that the economic progress of industries and regions is result of an organised cluster approach or due to some other external factors. Klumbies et al. (2011), argue that neither the access to local networks, broad supplier and service base, nor to a

well-developed infrastructure yields dominantly positive results, and the majority of findings indicate no significant effects. According to McCann et al. (2011) although the literature indicates that firms benefit from a location in a geographic cluster, cluster members receive economic benefits asymmetrically, depending on their firm level knowledge and life cycle. The importance of existence of internal factors, on benefiting from geographical location or cluster related research infrastructure was also stressed by Berchicci et al. (2011) and Hervas-Oliver (2012).

According to Schwanitz et al (2002), competitiveness means that individual firms, the firms of a sector or the firms of a region or of a country can successfully assert themselves in the domestic and the world market. It is also suggested by the same authors that competitiveness is not only a product of entrepreneurial activity of individual firms, but also a result of an appropriate structural policy, functioning competitive policy and adequate infrastructure. Therefore, the effectiveness of collaboration between firms, related institutions and government structures can strongly influence the performance of a particular cluster.

In order to assess the competitiveness of nations, the World Economic Forum developed the Global Competitiveness Report in 1996, which defines competitiveness as the ability of a country to achieve sustained high rates of growth in GDP per capita (World Fact Book, 2003). Another definition is provided by Sachs et al. (2000), who view competitiveness as a measure of the 'levers' that a country has to promote sustained improvements in its wellbeing, given global competition. The definition in the EU Competitiveness Report (2003) goes in the same direction and defines the competitiveness as the ability of an economy to provide its population with high and rising standards of living and a high level of employment for all those willing to work on a sustainable basis. The long term perspective of the competitiveness phenomenon has been analysed in the Competitiveness Roadmap, which is an attempt to describe and assess the main issues that will affect the world competitiveness landscape over the next four decades (Garell, 2011)

Zanakis and Beccera-Fernandes (2005) suggested that the primary drivers of competitiveness are lower country risk rating and higher computer usage, in entrepreneurial urbanized societies. Some countries such as the United Kingdom have adopted specific indicators for measuring national competitiveness. For the purpose of assessing the national competitiveness of the UK and design policies to narrow the gap in productivity with its main competitors, the Department of Trade and Industry of the United Kingdom (DTI) has set up UK Competitiveness indicators. They are designed to assist both Government and companies and cover: business environment, resources, innovation process and results. These indicators are further divided into different subcategories (DTI, 2004). For example the business environment is further divided by macroeconomic environment, competition, labour market, business perception of institutions and quality of life. The same institution designed different indicators for identifying underlying sub-regional characteristics of East of England, which influence business competitiveness such as: business formation and survival rates, gross value added per head in manufacturing, GDP per head, employment and average earnings (East of England Observatory, 2006)

The economic benefits of cluster agglomeration for firms also translate to economic benefits for regions (Ketels and Protsiv, 2013, Ion and Cristina, 2013). Regional specialization and urbanization in combination affect economic performance (measured by GDP per capita, gross value added per capita, and wages per capita) and regional industry clusters represent a powerful source of growth, new-firm starts, and quality jobs at a moment of economic uncertainty (Lindqvist, 2009, Muro and Fikri, 2011, Tambunan, 2005). Florida (2008) shares the notion that although nations have long been considered the fundamental economic units of the world, that distinction no longer holds true since today the natural units and engines of the global economy are mega regions, cities and suburbs in powerful conurbations, at times spanning national borders, forming vast swaths of trade, transport, innovation, and talent. Therefore it is regions that are the most appropriate for analysis of competitiveness because they are increasingly significant units for policy-making in many (though not all) countries (Aranguren et al, 2010). They argue that an analysis of competitiveness at regional level is particularly appropriate because, more even than nations, regions are in direct competition with one another for mobile

factors of production, such as capital and labour. According to Porter (1990), the competitiveness of a certain region depends on the nature of business environment in which firms or industries emerge. The performance of regional economies is strongly influenced by the strength of local clusters and the vitality and plurality of innovation. Regional wage differences are dominated by the relative performance of the region in the clusters in which it has strong positions (Porter, 2003).

At the micro level a firm can gain competitive advantage over its rivals in two ways, namely cost advantage and differentiation (Porter, 1990). While lower costs mean the firm is able to produce and sell comparable products more efficiently than its competitors, differentiation is the ability to fulfil customer expectations, through providing unique products or services. In any of these definitions at a macro or micro level, the central element is productivity.

Intellectual capital and its relation to innovation capacity are a common factor observed in the different schemes for the assessment of competitiveness (Solleiroa and Casanon, 2005). Hamel and Prahalad (2005) link sustainable competitive advantage with core competence and define it as an advantage that one firm has relative to competing firms. While most of the SME research focuses on identifying factors that determine an organisation's competitiveness (Barney and Zajac 1994), the approach of Barnet and Potinkes (2004) focuses more on survival as its' primary determinant. After studying IT management practices in various companies, Ross et al (1996) identified three assets that they see as most important to becoming and staying competitive. The human asset is an IT staff that consistently solves business problems and addresses business opportunities through information technology, the technology asset (sharable technical platforms and databases) and the relationship asset, implying the risk and responsibility for effectively applying IT.

The interaction between competitive and cooperative attitudes in a cluster has been identified as an important element of cluster dynamics (Porter, 1998). Tan et al (2013) described the dual role of companies within the clusters as a struggle between being different and being the same, analysing the dilemma between gaining both competitive

advantage and legitimacy, given the competitive pressures for differentiation and the institutional pressures from cluster for conformity. As previously discussed, a cluster combines competing firms in the same industry as well as business partners with compatible competencies. Porter and Stern (2001) build on that position, stressing that competitive pressure is also an important driver for innovation. Cluster members which cooperate along cluster links (e.g., in a supply chain or an export promotion programme) can not only be competitors in the same time, but thecontacts with competitors are important for successful innovation performance (Hemert et al., 2013) These complex roles were explained by Amorim et al (2003) who underlined that firms of different sizes may find themselves working towards compatible interests when they target different, but related, markets.

Porter (1998) stressed that clusters influence competition first, by increasing the productivity of companies based in the cluster; second, by promoting the innovation, and third by stimulating the formation of new businesses, which expands and strengthens the cluster itself. The competitive intensity within the cluster is emphasized by Pouder and St. John (1996) who goes further indicating that competition will be more intensified among clustered than non-clustered firms, because cluster firms compete directly for human, financial and technological resources as a result of geographical proximity. Although the market is a main regulator of competition inside the clusters, specialized institutions, and business associations can play important role in regulation of certain aspects (Dwivedi and Varman, 2003).

Main concluding remarks of the literature review are that there are enough evidence to support the findings that vast amount of interaction between the cluster members in developed countries create benefits that are not available for companies outside the cluster leading to increasing the competitiveness and producing wider economic benefits for whole regions. One of the main challenges for this research is to explore if there are such dynamic interactions between the cluster members in transition economies, and if they really provide the participating companies with advantages that are not available to non-members.

2.4 Specialization and innovation

High concentrations of SMEs, both from the supply and demand sides, as well as cluster support institutions, can contribute to high levels of specialisation, since similarly with the infrastructure, the existence of specialised companies attracts potential cluster participants, and when they are attracted, they generate additional pressure for further specialisation (Preissl and Solimene, 2003). This phenomenon has been interpreted by Preissl and Solimene (2003) as "economies of specialisation". Pezzeti and Primavera (2003) perceived sectoral specialization and geographical concentration as instruments for creating collective reputation as well, which also makes the access of SMEs to local and national clusters more attractive.

The influence of specialisation on quality and efficiency was recognised even by Xenophon, who wrote in 370 B.C: "He who devotes himself to a very highly specialized line of work is bound to do it in the best possible way" (Ott, 1996 p.9). Trade liberalisation, rapid technological change and globalisation create additional pressures for SMEs to specialise and to concentrate on their core competencies (Deavers, 1997). Some authors such as Beaudry and Breschi (2003) however, provide evidence to support the argument that clustering and specialization alone are not conducive to higher innovative performance. They point out that whereas location in a cluster densely populated by other innovative firms positively affects the likelihood of innovating, quite strong disadvantages seem to arise from the presence of non-innovative firms in a firm's own industrial sector, which would mean that positive agglomeration externalities are likely to flow only from innovative firms.

Correlating the company's' survival with its innovation capacity, Joyce and Woods (2003), indicate that the innovation depends to a great extent upon the type of industry, size of the firm and its level and degree of specialisation. For example, in wine clusters, innovation may be oriented towards better understanding of consumer preferences and tastes and towards improving the technological process of wine production. Conversely, SMEs in metal and machine industries may be in search of upgrading their competencies and skills and finding ways of producing even cheaper products for their clients.

Studies confirm that in developing countries local knowledge networks do matter for the innovation of firms within clusters, which is in line with the main hypothesis in the literature that the local knowledge networks are the main reason for the increased innovative and economic performance of the firms within clusters (Zhao, 2009*).* In terms of redistribution of local knowledge and capital, relationships between the universities and companies are becoming increasingly important, especially with regard to the collaboration at the R&D level (Vicedo and Vicedo, 2011, Hemert et al., 2013). For developing local knowledge networks and transferring the knowledge between the companies and research institutions, the role of the governmental support organizations as an intermediary is of paramount importance (Klimova, 2011). According to the concept of customer clusters, based on the fact that a firm's customers are concentrated in specific geographical areas, Bindroo et al. (2012) argue that the geographical location of a firm's customers, as indicated by the customer cluster variables, has also an impact on its innovation. De Dominicis et al. (2013) support the hypothesis that both social capital and geographical proximity are important factors in explaining the observed differences in the production of innovative output across European regions.
In addition Molina-Morales and Exposito-Langa (2012) provide evidence to support arguments that the degree to which a firm is involved with, or connected to, other firms in the cluster can influence its innovation results.

Innovation is so related to the clusters that some authors define them on the bases of the innovation process. For example, Preissl and Solimene (2003) defined clusters as a set of interdependent organisations that contribute to the realisation of innovations in an economic sector or industry. In this definition it is obvious that there is no geographic orientation; the decisive criterion is that the relevant actors take part in the same activity, which then leads to innovation. According to Mattsson (2009), innovation is the goal and cluster is the means. Contrary to Acs (2002), who argues that innovative activity occurs in the context of geographical space, the territorial dimension is not so important for Simmie (2004), who although agrees that innovation is the key driver of competitiveness and productivity, also sees it as an internationally distributed system of activities. Therefore geographically localised and clustered firms are likely to form only a limited

set of the total actors engaged in such a system. Furman et al. (2002) noted that innovation orientation is of paramount importance for global competitiveness not only for a cluster, but also for a region or nation. They defined National Innovative Capacity as the potential of a country – both as a political and economic entity – to produce and commercialise the flow of innovative technology at a given point in time.

Transition countries, which are subject of this research, are facing economic environment characterised by intensive change. Govindarajan and Trimble (2004) suggest that the ability to explore emerging opportunities by launching and learning from strategic experiments is more critical to survival than ever. According to Goold and Campbell (2002), a flexible organisation provides ways for a company to pursue innovation and allows for adaptability to changing circumstances. SMEs must realise that they have to be flexible to react to changes and continuously remain open to innovations since change will be a factor of crucial importance for the future (Muir, 1995). SMEs that are within a certain geographical proximity, will be more innovative as a result of develop higher degree of openness, with regard to using external sources for information (Idrissia et al., 2012).

Geographical proximity, shared infrastructure and strong links between cluster firms help in creating a specific innovative environment (Pouder and St. John, 1996), while on the other hand Liela et al. (2010) argue that cluster environment can positively influence development of companies facilitating their competitiveness and innovation capacity. An organisation, which adapts to the changes, is rewarded by consequential growth in sales, profits and, possibly, employment (Joyce and Woods, 2003). Brenner (2003) found that process innovations are more frequent in the high tech industries and industries with clustering dynamics, which showed a high level of local cooperation with suppliers and universities. According to Brenner and Mühlig (2013) the interaction between firms and universities and public research plays a more important role in more developed countries, while interaction between firms plays a more important role in less developed countries.

When dealing with innovation, the clusters usually have a critical need of some kind of leadership, but neither individual nor organizational actors wish to be led (Sydow et al,

2011). According to them this dilemma or paradox can only be 'managed' by organizing for leading (in) clusters in a way that takes into account the tensions and contradictions surrounding leadership of and in clusters.

As a conclusion of this section, few issues will have to be addressed with this research. First, following the fact that according to the examined literature geographical concentration contribute to high levels of specialisation and generate additional pressure for further specialisation, this research should provide evidence if such phenomenon exists in the selected countries in transition. Second, one of the challenges will be the study to explore if the findings from the literature review that geographical proximity, shared infrastructure and strong links between cluster firms help in creating a specific innovative environment, which contributes to improving the innovative capacity of the cluster members in developed countries, applies for the selected transition countries as well. In addition, the research should find out there is difference between cluster members and non-members in their innovative capacity.

2.5 Entrepreneurial environment

In the literature, there are numerous examples that emphasize the importance of an appropriate business environment, as a base for the appearance of a critical mass of SMEs as a precondition for cluster formation. There is significant evidence of the positive impact of clusters on entrepreneurship. Industries located in regions with strong clusters experience higher growth in new business formation, start-up employment and they contribute to start-up firm survival (Delgado and Stern, 2010, Reveiu and Dardala, 2012). Strong clusters are also associated with the formation of new establishments of existing firms, thus influencing the location decision of multi-establishment firms. Wennberg and Lindqvist (2010) also support previous research indicating that clusters do provide economic benefits not only for firms in general through creating more jobs, higher tax payments, and higher wages to employees, but also for newly started entrepreneurial firms in particular. Although not all start-ups are similarly affected by the survival benefits of locating in geographic clusters, because they are also influenced by heterogeneity in

firms' resources and capabilities (Pe'er and Keil, 2012), in general Wennberg and Lindqvist, (2010) argue that new firms in stronger clusters not only have higher survival rates, but also have higher economic performance in ways that have a direct impact on the regional economy.

The importance of the entrepreneurial environment is most evident with the example of industrial districts in southern Italy. In order to replicate the success of the clusters from the north, the Italian Government has initiated the formation of industrial districts in certain areas of southern Italy, but this top-down approach failed because of the lack of existence of entrepreneurial environment (Castillo and Fara, 2002). An example of a failed cluster initiative, one of the so called "Cathedrals in the desert" was the petrochemical plants in this area. The absence of relevant social and economic foundations in surrounding environment, according to Castillo and Fara (2002) were the reasons for failing to achieve results similar to the Northern Italian industrial districts.

Highly related to entrepreneurship is social capital, which is defined as a social relational artefact produced in social interactions (Anderson et al, 2007). According to them it is not owned, but represents a pool of goodwill residing in a social network and it can be envisaged as a revolving mutual fund of traded and un-traded interdependencies. An entrepreneurial environment is based on openness for criticism, new ideas and risk taking and was encouraged even 2000 years ago in ancient times in Mieza, where a generation of leaders was created under the supervision of Aristotle (Bose, 2003). Further to this, Bose (2003) stated that the key to risk-taking is an open atmosphere, where challenges to authority and ideas are accepted. Bose (2003) also emphasized that protecting an atmosphere of openness was a critical element of Mieza's educational environment, regardless of how direct and strong the criticism might have been. A learning organisation requires an environment where experimenting with new approaches is encouraged and errors are not perceived of as failures (Love et al., 2004). Such an environment would be appropriate for the formation of a critical mass of SMEs as a base for cluster development.

Clusters create an appropriate environment for new start-ups for a variety of reasons. Porter (1998) explained that entrepreneurs working within a cluster can easily perceive unsatisfied needs in their geographical area and using the needed assets, skills, inputs, and staff which are often readily available at the cluster location, they can establish a new enterprise. Furthermore, local financial institutions and investors are already familiar with the local context and may be less risk averse towards the cluster members. Moreover the professional/social environment in which an entrepreneur lives and works has a fundamental impact upon their ability to recognize and exploit opportunities (Cooper and Park, 2008).

The literature provides significant evidence that there is positive correlation between the clusters and entrepreneurship. The entrepreneurial culture is precondition for cluster development, but is also seen as a product since industries located in regions with strong clusters experience higher growth in new business formation, start-up employment and in the same time they contribute to start-up firm survival. The key question for this research is to what extent in the analysed countries there is a certain entrepreneurial spirit as a precondition for creating successful clusters, and do clusters in this region really contribute towards further strengthening of the entrepreneurial culture.

2.6 Cooperation and trust building

According to Ceglie (2003), geographical concentrations of SMEs that operate in the same sector are not sufficient for producing "external economies". He argues that cooperation, building of trust and constructive dialogue among cluster actors, the exchanging of information, identifying common strategic objectives, agreeing on a joint development strategy and its systematic and coherent implementation are crucial and they as such require substantial effort and commitment to common goals. Cooperation networks are groups of firms that cooperate on a joint business project complementing each other and specializing in order to overcome common problems, achieve collective efficiency and penetrate markets beyond their individual reach (UNIDO, 2000).

Clusters create external economies as a result of networked operations and every cooperation network generates economies of scale. The larger the network is, the more beneficial for its individual members (Beerpoot, 2004). For example, externalities arise from an education system and they generate a continuous supply of specialised human resources for cluster members, which could be a source of competitive advantage (Beerpoot, 2004). Humphrey and Schmitz (1996) distinguish between horizontal and vertical networks, defining as horizontal those that are formed exclusively by SMEs, whereas those formed with large-scale enterprises are considered to be of the vertical type. Both terms (networks and clusters) are frequently used as synonyms, but Rosenfeld (2001) makes the connection between network concepts and cluster business dynamics. Within these concepts he distinguishes between two types of networks – hard and soft (See Table 2.1).

Table 2.1 Characteristics of networks and clusters

	Hard networks	**Soft networks**	**Clusters**
"Membership"	Closed	Open, membership based	Not required
Relationships	Collaborative	Cooperative	Cooperative and competitive
Basis for agreements	Contractual	Majority determination	Social norms and reciprocity
Value added	Allows firm to focus on core competencies	Aggregates and organize demand for services	External economies
Major outcomes	Increased profits and sales	Shared resources, lower costs, benchmarking	Access to suppliers, services, labour markets
Basis of external economies	Shared functions and resources	Membership	Location/proximity
Shared goals	Business outcomes	Collective vision	None

Source: Rosenfeld (2001)

This distinction between networks and clusters may be used to help explain differing relations between cluster, business associations and business alliances. According to the described characteristics, business associations are a form of soft networks and business alliances are hard networks created on a contractual base. Besides on those described above, Chakravorti (2004) gives two examples that show the types of benefits derived from the product network. Firstly, it was noted that windows-compatible PCs are less expensive than Macintoshes because products that have large networks around them are often cheaper to use than products that have smaller ones. Secondly, a network grows, and the value increases as the size of the network grows (e.g., Sony's PlayStation, has become more desirable to consumers as the number of players of the games and developers, who create compatible software, rises). Buhl and Meier zu Kocker (2010) distinguish between networks for sustainability and sustainable networks. Sustainability networks are mainly established with ecological aims that also comprise economic and social aspects, while sustainably acting networks on the other hand are institutionalized company-research co-operations oriented to stability and long-term activity (Buhl and Meier zu Kocker, 2010)

When analysing industrial districts, as an Italian version of SME clusters, however, Paccini (2003) argues that the features of an integrated society through networks are not apparent in all cases and there is enough evidence to support the idea that cooperation is not an invariant feature of industrial districts. He also points out the inability of inter-entrepreneur traditions of solidarity or cooperative attitudes to cope with new challenges. Staber (2009) argues in the same line that many studies of clusters have not been able to document the high levels of inter-firm collaboration that cluster theory predicts. Cooperation and intra-cluster relations were subject of critical observation by Li et al (2013) as well, who underline that even stronger and more stable inter-firm links might boost a firm's performance in the short term, but in the long run they might be detrimental to sustaining the innovation and competitiveness of cluster firms as the firms become overly embedded in the network and create high dependence. Emphasizing only local relationships at the expense of distant ones may undermine the performance of cluster members, since distant ties also are important for innovation.

For strengthening the cooperation between cluster firms, formal institutions like business associations, labour associations and specialized institutions are considered very important (Dwivedi and Varman, 2003), although there is a clear demarcation between networking activities that are led by brokers and those that are created of the participating firms' own volition (Hanna and Walsh, 2008). Raising the level of trust between businesses that are cluster members is a strategic determination in the development of clusters. Camison (2003) promoted the idea that, as an organizational model, the industrial district emphasizes the contextual significance of shared social institutions and the importance of relationships based on trust and on the sustained reproduction of co-operation between intra-district agents. High levels of trust also decrease transaction costs, reducing the costs for legal disputes and administrative procedures.

The importance of trust for exchanging strategically important information and knowledge, and promoting cooperation was stressed by Putnam (1993) who regarded it as an essential element of the norms that arise from social networks. He provides evidence that proximity that is the key characteristic of a region possesses not only a spatial (geographical) dimension, but also a relational dimension. The literature agrees that spatial proximity at least encourages, the emergence of trust and understanding (Boschma, 2005), but they are not an automatic result from geographic proximity, because the trust is also influenced by the duration of the relationship and frequency and repetitiveness of communication between the actors (Nilsson, 2008). Fukuyama (1995) defines trust as "the expectation that arises within a community of regular, honest, and cooperative behaviour, based on commonly shared norms, on the part of other members of the community (p. 27)."

Although trust is often associated with social capital, the literature evidences some confusion concerning their relationship. One group of researches considers trust a precondition, while the second one regards trust as a product or a benefit of social capital. Coleman (1988), Putnam (1993), Fukuyama (1995) and Francois (2003) see trust as a key component of social capital. The more social capital is used, the more it grows (Coleman 1988). A number of analysts, however, doubt whether trust should be treated as an integral element of social capital and argue that it is one of its products and consequences

(Woolcock, 2001, Field, 2003). It can be concluded that trust and social capital are mutually reinforcing - social capital generates trusting relationships that in turn produce social capital.

Taking into account that social capital is mainly associated with strong inter-firm ties, certain interpersonal dynamics (primate of trust and reciprocity), and a common context, language and code of behaviour of individuals integrated in the structure (e.g. shared terms and experiences) (Lesser, 2000). The trust created by virtue of social capital can be a factor of business stabilisation as well as a platform for collective innovativeness (Landry et al., 2001; Maskell, 2000). According to Fromhold-Eisbith, 2003, innovative milieu and social capital, both emphasise the advantages of dense systems of socially embedded and trustful relationships between organisations which create coherence and common values, reduce uncertainty, provide support, enable learning and improve access to information. Altogether this helps innovative firms to emerge and to evolve (Fromhold-Eisbith, 2003)

Granovetter (1985) argues that social relations and the obligations inherent in them are two main sources of trust in economic life. Coleman (1990) suggests that as a rational account of human behaviour, trust can only be produced in informal, small, closed and homogeneous communities which are able to enforce normative sanctions. Dwivedi and Varman (2003), agrees that informal institutions play a significant role in exchanging shared values and norms, which may serve as a starting point for creating work ethics and business practices.

In spite of the differences about the cause-effect relationship, the literature provides significant evidence about the importance of relationships based on trust and co-operation between cluster members. Therefore it can be concluded that trust is one of the most important ingredients in the cluster development process. For answering the research questions it is specifically important to be examined if there is a sufficient level of trust among the companies in the selected countries, which contribute towards more efficient clustering. Furthermore the research should provide evidence if the level of trust is higher

among the cluster members, as a result of joint cluster activities, than compared to the non-members.

2.7 Cluster support policy

Policymakers have identified industrial clusters as potential engines for economic growth and innovation. Cluster policy is not an industrial policy only, but also a socio-cultural one. Policy makers need to determine the place of the cluster policy with regard to the overall economic policy of the country. This is particularly important since considerable financial support needs to be allocated to the projects and the capacity of each country to do so vary significantly (Andersson et al, 2004). According to Bruch-Krumbein and Hochmuth (2000), a specific industrial policy is understood as a cluster policy if it is oriented to the promotion of specific regional characteristics and if it aims, in a structural sense, to make a contribution to the further development of branch concentration or network building blocks for clusters or to the further development of existing clusters.

According to the Europe 2020 Strategy clusters are important elements for improving the business environment, especially for SMEs. Cluster policies should not only be seen as a powerful policy instrument to promote research, development and innovation, but also as an integral part of industrial and innovation policy. Clusters have been also recognized as an instrument for regional development policies in most of the OECD countries, such as Czech Republic, Finland, Hungary, Iceland, Ireland, Japan, Luxemburg, Netherlands, Norway, Portugal, Spain, United Kingdom and United States (OECD, 2010).

A cluster policy should provide a framework for dialogue and cooperation between firms, the public sector (particularly at local and regional levels of government) and non-governmental organisations (Andersson et al, 2004). Similar idea is supported by Cooke (2002), who argues that clusters can be implanted by joint efforts of Triple helix consisting of industry, government, academia, rooted in a region or locality with the willingness to build on social capital of the public and the private variety.

In general, cluster policy can be implemented in one of two ways: (1) assisting the development of an existing and already established cluster, and (2) creating a new cluster deploying external knowledge and experience (Porter, 1998). According to Ketels and Memedovic (2008) more complex is the question of how economies can develop new clusters instead of maximizing the efficiency of the existing ones. Whereas in the past considerable efforts have been spent to set up as many as possible clusters in the European countries, it is nowadays the challenge to make them more competitive, since only those clusters can fulfil the political and economic expectations that provide real added values for the cluster members. Cluster excellence contributes to more prosperity for regions, better competitiveness for enterprises and more return on investment for investors (Christensen et al, 2011). The need to promote cluster excellence has gained a lot of attention, political acceptance and widespread support from stakeholders.

Porter (1998) further underlines that government should not create clusters artificially, when there are no preconditions for that, but should reinforce and build on already established and emerging clusters as was evident in the previous examples of Southern Italy. From that perspective the state should not be a main initiator and owner of cluster processes, but only to create favorable preconditions for clustering. Regarding the preconditions for cluster development and Kamath et al. (2012), provide evidence stress the role of the business and socio-political climate, facilitative government policy, path dependence and a culture of innovation and entrepreneurship, agglomeration economies, and the role of anchor firms as factors that determine why some clusters are successful and others are not.

Both approaches to cluster policy share some specific characteristics: focus on local systems or regions instead of on individual companies, promotion of SMEs instead of large companies, reliance on internal strengths, promotion of social capital as an important factor of cluster development - encouraging trust-based relationship to increase the flow of knowledge between local players rather than intervening, for example, through financial incentives (Boekholt and Thureaux 1999). For public policy, supporting higher productivity and innovation in clusters is critical because they are the factors that

in the long term define the sustainable level of prosperity in a region (Damaskopoulus et al., 2008).

When selecting appropriate instruments for supporting cluster development, the policy support has to consider the stage of development of the cluster and with this regard two different major strategies are necessary to adequately support cluster (Menzel and Fornahl, 2007). Menzel and Fornahl (2007) distinguish between a focussing, which means, that during the emergence of the cluster, the aim must be to focus the often thematically scattered firms on particular points, and a widening of the cluster's diversity after the growth stage, where the intention must be to steadily sustain a certain heterogeneity of the cluster to avoid a decline and possibly enter new growth path. Ketels and Memedovic (2008) argue that clusters can improve the efficiency of economic policy tools but serious mistakes are often made that have created the misguided impression that cluster development is close to traditional industrial policy.

Within the frame of cluster-based industrial policy there is a broad range of potential intervention measures that could be applied. Fundamentally the essential assistance requirements lie in the following areas:

- Stimulating the development of cluster relationships. The literature provide evidence that, in developed countries, creating trust and cooperation has been a long-term process and took a long period of time (Kanter, 1989). This is in line with findings of Ingstrup (2013) who argues that in Marshallian/Italian industrial district type of cluster dominated by small and medium-sized firms the purpose of the performed cluster facilitation is to support and expand the existing inter-firm cooperation based on the needs of the firms and with respect for their resource limitations. Furthermore, the cluster facilitators also fulfil the role of an organiser by arranging, for example, networking events, seminars, and projects within the cluster.

- Capacity building of individual companies and institutions, as a prerequisite for building quality inter-cluster relationships. One of the main obstacles for creating synergetic relationship between the companies (partners and competitors as well)

and companies and institutions (business associations, chambers, R&D institutes) might be that most of them are going through a process of transition and are facing their own internal structural problems. Because of this, they might create their strengths not on internal factors, (such as productivity, innovation and efficiency), but on external factors (for example monopolistic market positioning) which brings only short-term benefits and does not secure long-term sustainability. Such dependence on "temporary" factors, leads to a decrease in self-confidence and prevents participants in the cluster from developing deep and synergetic cooperation. Independence is a big achievement, but interdependence is a choice that only independent actors can make (Covey, 1990). Lechner and Leyronas (2012) provide evidence to support the argument that a weak position within a cluster cannot be compensated for by strong extra-regional networking activities and therefore cluster-specific advantages are firm-specific and the basis for competitive advantage.

- Strenghtening local or/and regional organizations or committees for cluster development. The role of such an organization would be to have close contact with local firms in order to be aware of their problems and to involve local industry in policy design and implementation (Meyer-Stamer, 2000). A cluster organisation is needed to continuously motivate cluster members to cooperate in the sense of creating joint cluster vision and strategy, to manage internal and external linkages and joint projects" (Will, 2005). "The cluster organisation structure consists of cluster steering/strategy body responsible for strategic decisions and supervision, cluster management facilitating linkages and managing the day to day business, and working groups responsible for specific tasks and implementation of joint projects" (Will, 2005, p.2). An intermediary organization could be of a significant importance, especially in the less favored regions, where establishing a network of intermediary support organizations might maintain and strengthen the contact of the innovation support structure organizations to the enterprises (Landabaso, 2001)

- Creating favorable legal and administrative framework conditions and promoting (or at least not restricting) the innovativeness of SMEs (Verhees and Meulenberg,

2004). The national climate for innovation plays important role for business development, but for fostering innovation and entrepreneurship the favorable microeconomic and local business environment is even more important (OECD, 2005).

Governments - both national and local - have considerable roles to play in the promotion of a clustering approach. According to Porter (1998), they should actively promote such an approach, besides creating the framework conditions, setting the rules for competition and promoting entrepreneurial spirit. Critical areas of support include market research, establishing trade contacts, export promotion through fair participation, training courses for managers, technical assistance in introducing quality standards and development of tailored financial support (Jovanovic, 2003).

The importance of increasing the capabilities of individual companies, and especially their management skills was underlined by Chakravarthy (1997) and Karaev and Will (2005). Chakravarthy (1997) argues that a firm's organizational ability to leverage and strengthen existing competencies is important, but it must equally adapt itself at diversifying its competence base. In addition he underlines that top management's skills in managing the tensions among these dynamics are a firm's real source of competitive advantage. The excellence in the cluster management process was emphasized by Schretlen et al (2011), who suggest that specific attention needs to be paid to how the cluster management process should be organised, especially towards how the clusters can best achieve their objectives. Competent cluster management and adequate financing of cluster activities have been also identified as one of the key preconditions for successful cluster development in Poland (Bialic-Davendra and Pavelkova, 2011), which makes the need of continuous training for cluster management evident.

Capacity of the cluster management is one of the most crucial preconditions, especially in the early stages of existence, but is not enough for creating sustainable cluster. Creating an organizational culture of involvement of different stakeholders, is also an important element for continuous innovation and improvement, reinforcing the social capital of the cluster, which in turn is a fundamental element for cooperating, innovating and promoting actions to improve the collective efficiency of the cluster (Carpinetti et al, 2007).

In order to be able to make the most of clusters and of other collaborative networks, Forsman (2009), recommends focusing on improving the fundamental abilities of small enterprises for learning and innovation in collaborative networks; strengthening relationship orientation, stimulating receptivity to new knowledge and crystallizing intentions to knowledge creation. A review of small firms' research, conducted by Bryan (2006), however, indicates that the relationship between training and growth of SMEs has rarely been considered within the wider context of other factors that may influence growth.

All cluster participants need assistance in this process of strengthening trusting cooperation and developing effective private – public dialogue. The clusters usually have a critical need of some kind of leadership, but neither individual nor organizational actors wish to be led (Sydow et al, 2011). According to them this dilemma or paradox can only be 'managed' by organizing for leading (in) clusters in a way that takes into account the tensions and contradictions surrounding leadership of and in clusters. In the process of role definition, the international donor organizations should find their place too in providing support measures on all levels, taking into consideration the sustainable development of the country in the sense that economic benefits are available for everyone (Poole, 1998).

Birkinshaw and Hood (2000) argue, however, that there are some indicators that clusters with high levels of dependence on foreign assistance are less autonomous, have weaker capabilities and have difficulties in achieving long-term sustainability. Birkinshaw and Hood (2000) did not imply a rejection of foreign assistance programs, but suggested that there are indeed some reasons for host country governments to be concerned about the long-term sustainability of their largely dependent clusters.

Besides the foreign cluster assistance programs, and local knowledge networks it is also essential to keep in mind that global knowledge linkages continue to play a major role in the innovative performance of firms in developing countries (Zhao 2009). He points out that firms that are well connected to the global economy are likely to gain through global knowledge linkages and therefore it is crucial that these countries establish policies to

encourage foreign direct investments. Based on the case of Estonian wood and forestry cluster, Roolaht (2007) claims that the cluster policy need to find a balance between regional (or global) coordination within the corporate network and local win-win arrangements, since in spite of the fact that the networking within a regional cluster, and also rivalry between networks, can considerably support cluster development, in certain cases they can produce some detrimental effects. Public programmes and instruments, that support network and cluster managements financially in initiate international cooperation, however, are not sustainable and successful, if the cluster management has no clear mandate for internationalization from its members (Meier zu Köcker et al, 2010).

In spite of the evidences that cluster-based economic policy has produced positive results so far, it is not a panacea and should not be used as a "magic tool" for improving economic situation of a certain region (Ketels, 2003). In certain cases, cluster development policies have not been successful. For example in Indonesia, most failures can be attributed to (1) neglecting cluster linkages to markets; (2) neglecting or even eroding SMEs' self-organization potential; and (3) limited support from local government and private organizations (Tambunan, 2005). As a result of inadequate cluster policy, to the already existing list of embryonic, emerging, world-class or stagnating clusters, Mattsson (2009) adds a term "pathetic clusters" to describe a cluster that: (i) has nothing or very little of the Porterian diamond model; (ii) is comparably small in size (in terms of number of firms, employees and capital) and (iii) despite fitting the aforementioned points still draws on cluster theory, especially on the shining examples for legitimization. He suggests broadening the cluster concept to include "cluster initiatives" that aim at network and actor linking innovations rather than the narrow product-centred innovation models that classic cluster concepts prioritize. Nathan and Overman (2013) argue that cluster support approach rests on shaky theoretical and empirical foundations and in contrast suggest that more attention should be paid to the appropriate spatial scale for horizontal interventions.

The successful cluster-based economic development approach needs to take into consideration both, positive and negative experiences from different countries and needs to be built on the specific conditions present in a location or country (Ketels and Memedovic 2008). Besides adapting to specific country conditions, Stejskal and Hajek

(2012) suggest that cluster support policy needs to focus on identifying new tools for competitive advantage analysis of clusters and measuring cluster potential. In addition, time should be taken into account much more than it has been done so far in the literature and policy measures related to supporting innovation and clusters should be adapted to the cluster life cycle (Xie et al., 2011). Based on their research in Latvia, Boronenko and Zeibote (2011) argue in the same direction, stressing that governments should support cluster development to achieve sustainable long-term development based on natural growth poles, exploiting the potential of regional comparative advantages such as specific concentration of skills and knowledge (labor force), concentration of industries, natural resources, etc., but not concentrate on short-term priorities in cluster development.

Time influences the effectiveness of policy measures first, through the change of the importance of different local mechanisms and second, through the changes in the market situation and the technological development in industries, as an important factor for the emergence of local clusters (Fornahl and Brenner, 2003). Finally, they argue, since the emergence of local industrial clusters is a process the impact and effectiveness of policy measures change during the development of clusters. At different times within this development, different policy measures have to be applied because at different stages of cluster development there is a statistically significant difference in terms of the level of implementation of cluster activities (Jircíkova et al., 2013). Since the cluster development process is very difficult to govern and there is no recipe for creating clusters or making innovation happen, Mattson (2009) argues that regions and local economies around the world that are involved in cluster initiatives would probably benefit much if policymakers shifted focus from mimicking success stories towards understanding more about what they cannot govern or make happen.

Few conclusions can be derived from the literature about cluster support policy. Clusters have been recognized as an instrument for economic development policies in many countries. The cluster-based assistance measures to companies should be taken with regard to the overall economic policy of the country. In addition, when selecting appropriate instruments for supporting cluster development, the policy support has to consider the stage of the cluster and the governments should support cluster development

to achieve sustainable long-term development instead of concentrating on short-term priorities. Furthermore the successful cluster-based economic development approach needs to take into consideration both, positive and negative experiences from different countries and needs to be built on the specific conditions present in a location or country.

The findings from the literature from this section are of particular importance for answering the third research question "Do cluster support programs and projects, implemented by international donor organizations produce effective results for the cluster members", since international organizations play significant role in designing and implementing cluster policies in Bulgaria, Republic of Macedonia (FYROM) and Serbia.

2.8 Literature gaps

The literature has shown the benefits of establishing clusters as an efficient tool for overcoming the size limitations of small companies. Geographical proximity brings so called agglomeration effects in terms of higher specialization, innovation and transfer of knowledge, which results in a reduction of costs and improving the competitiveness of industrial sectors, regions and nations. Although there are some examples of failure of cluster policy, in general there is strong evidence that joining forces into clusters bring additional benefits for SMEs that made such strategic decisions. According to the best practices from countries with long tradition of SME clusters, certain preconditions for clusters development have to be fulfilled, instead of top-down driven initiatives, by regional or national authorities.

In spite of the abundance of literature that provides evidence about clusters and benefits they produce for the cluster members, the following literature gaps can be identified:

First, most of the cluster literature covers the experiences in developed countries where clusters already produced certain positive effects, such as Italy (Alberti, 2003, Amorim et al, 2003, Bagella et al, 1998, Camisón, 2003, Castillo and Fara, 2002, Ceglie, 2003, Gallo and Moehring, 2002, Paniccia,2002, Pezzeti and Primavera, 2003, Pinch et al, 2003,

Putnam, 1993), United States (Porter , 1990, 1998,2000, 2003, Bergman and Feser, 1999, Putnam, 1995, Sanchez and Omar, 2012, Saxenian, 1994), Germany (Brenner and Fornahl, 2002, Brenner, 2003, Bruch-Krumbein and Hochmuth, 2000, Doeringer and Terka, 1996, Hassink, 2001), Japan (Nishimura and Okamuro, 2011, Ozawa, 2003), United Kingdom (Townsend, 1998), France (Lechner and Leyronas, 2012). Although not at the same extent as in the developed countries, the literature also provides examples of cluster approaches in developing countries (Canie and Romijn, 2003, Fisher and Reuben, 2000, Ghanbari et al, 2011, Zhao, 2009, Hernández-Rodríguez and Montalvo-Corzo, 2012, Solleiroa and Castanon, 2005, Van Dijk. and Sverrisson, 2003, Mitra and Pingali, 1999, Tambunan, 2005, Hong et al, 2005) and even in transition countries from Central and East Europe, such as Poland (Bialic-Davendra and Pavelkova, 2011), Latvia (Boronenko and Zeibote, 2011, Liela et al, 2010), Estonia (Roolaht, 2007), Russia (Kozyrev and Malyzhenkov, 2011), Romania (Dan, 2012), but there is very limited presence of cluster approach in transition countries from the countries which are subject of this research (Jovanovic, 2003, Ketels et al, 2006, Sachs et al, 2000, Schwanitz et al, 2002, Szerb et al, 2007).

Second, even in cases where the literature examines cluster phenomenon in the transition economies, it has been approached from a perspective of institutions responsible for creating cluster support policies. There is no previous research that has been conducted in Bulgaria, Republic of Macedonia (FYROM) and Serbia from a perspective of companies - the cluster members, as final beneficiaries of cluster-based policies.

There is no study that provides evidence that they receive some benefits as a result of being involved in clusters, mainly because of two reasons. One is the fact that in the developed countries, cluster development has been a long-term process and took a long period of time (Kanter, 1989) and time influences the effectiveness of policy measures, through the change of the importance of different local mechanisms and through the changes in the market situation and the technological development in industries, as an important factor for the emergence of local clusters (Fornahl and Brenner, 2003). They also argue, since the emergence of local industrial clusters is a process, the impact and effectiveness of policy measures change during the development of clusters and at

different times within this development, different policy measures have to be applied. Therefore, according to Boronenko and Zeibote (2011), the governments should support cluster development to achieve sustainable long-term development, and not concentrate on short-term priorities. Another possible reason, for not addressing the benefits from cluster support policy, from a perspective of companies might be that most of the clusters that were created in Bulgaria, Serbia and Republic of Macedonia (FYROM) were initiated by international donor organizations and according to their monitoring and evaluation procedures, they appear to have yielded satisfactory results so far. These evaluations, however, might be biased and are not taking into the consideration the benefit of individual cluster members, which might be reluctant openly to express that there were no significant differences in their performance before and after becoming cluster members.

The third literature gap is that, although the competitiveness of clusters and its cluster members has been widely researched, the literature does not cover the competitiveness of companies in SEE that made a decision to stay out of clusters, so called non-members. There is abundance of evidence in the literature about benefits that clusters produce for their members. According to Pouder and St. John (1996) competitors within the cluster will benefit from agglomeration effects in a way where they will gain cost advantages and have access to resources that are not available to competitors not located in the cluster. Also according to Boschma and Weterings, 2004, tacit knowledge enhances trust between cluster members and represents the intangible assets of the cluster and as a result of the fact that the level of trust is higher within the clusters, than compared to the level between other companies (Ceglie, 2003, Camison, 2003). The geographic concentration of clusters contributes to developing additional financial benefits (Krugman, 1991) and technological externalities (Belleflamme et al, 2000). In spite of the fact that the literature does not provide many objective and explicit debate on methods for measuring different SMEs' performances comparatively (Bititci et al., 2013) , on average the companies in the industrial districts achieve better static or dynamic economic performance than the companies in non-Industrial District areas (Paniccia, 2002).

However, there is no research that confirms that non-members in the selected countries are facing any disadvantages by deciding to stay out of the particular cluster or if there is any type of 'knock-n' effect. Contrary to the industrialized countries where being a cluster member is simply a matter of existing in a certain geographical location or tradition, in the transition countries to become a cluster member is a matter of a conscious decision, based on variety of reasons and expectations of SMEs. In the literature there is no evidence if that decision produced negative effects for non-members.

By analyzing the existing experience and interactions of the cluster participants in the selected countries this research contributes in filling these literature gaps and provides solid base for more effective measuring the impact of the cluster interventions.

2.9 Summary

Over the last few years, the cluster phenomenon has been discussed extensively in transition countries. Governments have placed a lot of their hopes in clusters without any criticism, as an efficient instrument in their efforts to recover their economies, and cluster policy is integrated in the economic development strategy in all of the selected countries from SEE. Similarly to other developing and transition countries, such as for example Romania (Dan, 2012), Latvia (Boronenko and Zeibote, 2011), Russia (Kozyrev and Malyzhenkov, 2011), Iran (Ghanbari et al., 2011), most of the clusters that were created in several industrial sectors in Bulgaria, Serbia and Republic of Macedonia (FYROM) were initiated by international donor organisations, using different methods for cluster development and according to their monitoring and evaluation procedures, they appear to have yielded satisfactory results so far. These evaluations, however, frequently have been biased, and have not taken into the consideration the benefit of individual cluster members, which in certain cases openly express that their expectations have not been met and there were no significant differences in their performance before and after becoming cluster members. In other cases these initiatives are accepted and fully supported by the domestic institutions with insufficient impact analysis and without appropriate critical assessment whether they are in line with the national economic development policy.

Having in mind their recent establishment, it might be too early for having precise evidence of the contribution of the clusters to the overall national competitiveness, but companies within a cluster should already be able to witness certain concrete benefits, improving their economic performance. A wealth of experience has been accumulated globally regarding cluster development and there are numerous attempts at transferring that knowledge into transition countries through organising information trips, attending cluster conferences, workshops, etc. Although there is abundance of written materials about the cluster concept in the industrialised economies, there is a gap in the literature for the transition countries. This research summarizes different theoretic concepts on cluster development, and attempts to fill in the literature gaps, through analysing the influence of clusters on business performance of the cluster members in selected countries from SME perspective and providing a conceptual model for presenting the correlation between preconditions for cluster development, cluster benefits and competitiveness.

Instead of selecting a cluster definition or creating a new one, this research attempt to determine how companies understand what a cluster is, using as a starting point relatively general definition, provided by the Project Macedonian Competitiveness Activity (MCA), funded by the United States Agency for International Development (USAID) in Republic of Macedonia (FYROM) in 2004, which states that "*clusters are defined as inter-related firms and other institutions that drive the competitiveness of a given industry"* (USAID/MCA, 2004). USAID has had significant influence in the creation of cluster policy across the selected countries and is supporting implementation of similar Competitiveness Activity projects in Bulgaria and Serbia, building on same definition and principles.

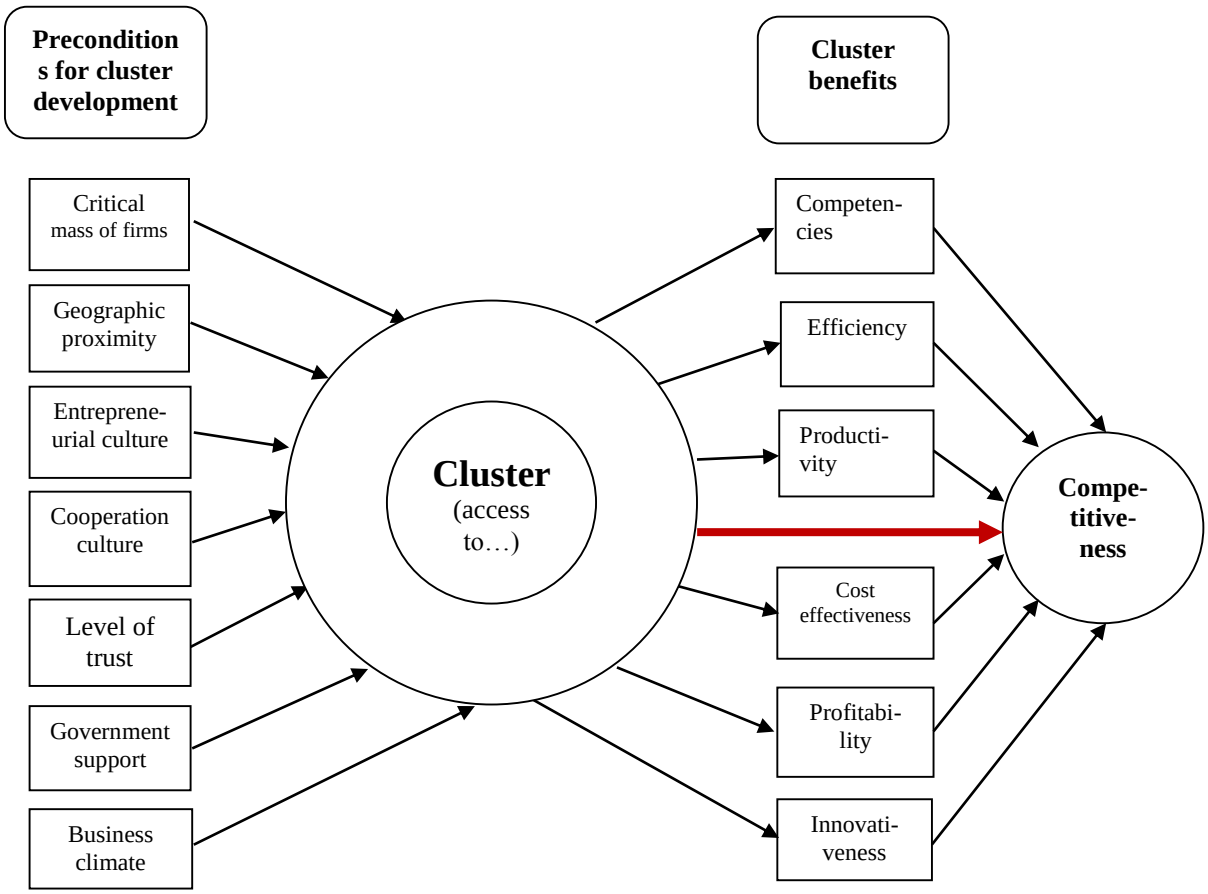
Development of preconditions for cluster development is a long-term process, which may even take decades (e.g., Italian industrial districts). In order to accelerate that process, the transition countries have to introduce appropriate cluster policies, as an integral component of their overall strategies for economic development. At the same time, in the process of cluster development, the international donor organizations need to find their place in providing support measures on all levels, taking into consideration the sustainable

development of the country in a sense that economic benefits are available for everyone (Poole, 1998).

2.9.1 Conceptual Cluster Model

The Cluster model described in Figure 2.1 is a hypothetical model only, based on the reviewed literature. It aims at describing the cause effect relationship between the preconditions for cluster development, cluster benefits and competitiveness. It is based on four elements, and each of them consists of more factors, which were derived from the literature review and personal interviews, which were undertaken before conducting the survey: a) Preconditions for cluster development, b) Clusters as facilitator to access to different factors, c) Cluster benefits and d) Competitiveness

Figure 2.1 Conceptual cluster model



a) **Preconditions for cluster development** - Preconditions for cluster development can be considered as an input in the Cluster Model. They are the key factors that contribute to creation and development of clusters, which have been derived from the cluster literature (Brenner and Mühlig, 2013).

b) **Cluster** - Due to the concentration of more firms in an area, cluster facilitates the access to suppliers, specialized labour, research and development, technology, business infrastructure, finance, customers, business support organizations, etc. (Gallo and Moehring , 2002)

c) **Cluster benefits** – The cluster benefits in this model present an output of the interactions within the clusters. According to Pouder and St. John (1996) competitors within the cluster will benefit from agglomeration effects in a way where they will gain cost advantages and have access to resources that are not available to competitors not located in the cluster. This was supported by Gordon and McCann (2000) and Christensen et al. (2011) who argue that clusters contribute to more prosperity for regions, better competitiveness for enterprises and more return on investment for investors. The geographic concentration of clusters contributes to developing additional financial benefits (Krugman, 1991) and technological externalities (Belleflamme et al, 2000).

d) **Competitiveness** – Competitiveness is an impact of the cluster benefits. The cluster excellence contributes to better competitiveness for enterprises and more return on investment for investors, and better prosperity of the regions (Christensen et al, 2011). Schwanitz et al (2002), define competitiveness as a mean for individual firms, industrial sectors, regions or whole nations to assert themselves successfully in the domestic and global market.

Each of the four elements consist of different factors, which are described in details bellow:

a) Preconditions for cluster development

- *Critical mass of firms* – A density of existing SMEs in a certain region is defined through critical mass (Andersson et al. 2004, Morgan, 2007). Critical mass means the mass necessary in order to have a basis for more and intensive cooperation, to better exploit the innovative potential, to sustainably defend its market position, etc. Critical mass is determined by the number of firms, the number of employees and other local conditions such as regional human capital, the presence of supporting services, and public research institutions (Brenner / Fornahl 2002).
- *Geographical proximity* - Geographical proximity creates competitive advantages to both SMEs, which closely cooperate and compete (Gallo and Moehring, 2002, Porter, 1998, Rosenfeld, 2002). Competitors within the cluster will benefit from agglomeration effects in a way where they will gain cost advantages and have access to resources that are not available to competitors not located in the cluster (Pouder and St. John, 1996, Cooke, 2001, Preissl and Solimene, 2003, Boschma and Weterings, 2004, Canie and Romijn, 2003).
- *Entrepreneurial culture* – Strong clusters are also associated with the formation of new establishments of existing firms, thus influencing the location decision of multi-establishment firms (Wennberg and Lindqvist, 2010, Reveiu and Dardala, 2012, Delgado and Stern, 2010). The professional/social environment in which an entrepreneur lives and works has a fundamental impact upon their ability to recognize and exploit opportunities (Cooper and Park, 2008). Some top-down approaches from Governments failed because of the lack of existence of entrepreneurial environment (Castillo and Fara, 2002).
- *Cooperation culture* - Many successful case studies indicate that the intensity of cooperation in the form of clusters – can also strengthen the competitiveness of national economies in particular. (OECD, Conference documents, East West Cluster Conference, 2002, Hernández-Rodríguez and Montalvo-Corzo, 2012). Cooperation culture and linkages among cluster members results in a whole greater than the sum of its parts (Porter, 1998,

Beerpoot, 2004, Molina-Morales and Exposito-Langa, 2012, Nicolini, 2001, Navickas and Malakauskaité, 2009).

- *Level of trust* – Building of trust and constructive dialogue among cluster actors, exchanging of information, identifying common strategic objectives, agreeing on a joint development strategy and its systematic and coherent implementation requires substantial effort and commitment to common goals (Ceglie, 2003). Camison (2003) promoted the idea that, as an organizational model, the industrial district emphasizes the contextual significance of shared social institutions and the importance of relationships based on trust and on the sustained reproduction of co-operation between intra-district agents. Trust is regarded as one of the essential elements for exchanging strategically important information and knowledge and promoting cooperation (Putnam, 1993, Boschma, 2005, Fukuyama, 1995, Coleman 1988, Francois, 2003, Landry et al., 2001, Maskell, 2000, Lockett et al, 2008).
- *Governmental support* – Governments - both national and local - have considerable roles to play in the promotion of a clustering approach (Porter, 1998, Damaskopoulus et al., 2008). According to Porter (1998), they should actively promote such an approach, besides creating the framework conditions, setting the rules for competition and promoting entrepreneurial spirit.
- *Business climate* – According to Porter (1990), the competitiveness of a certain region depends on the nature of business environment in which firms or industries emerge. Creating favorable legal and administrative framework conditions and favorable microeconomic and local business environment is of particular importance (OECD, 2005, Verhees and Meulenberg, 2004).

b) Cluster benefits

- *Competence* – Hamel and Prahalad (2005) link sustainable competitive advantage with core competence and define it as an advantage that one firm has relative to competing firms. Specialization and focusing on core competence within the clusters have been stressed by Preissl and Solimene (2003) and Pezzeti and Primavera (2003).

- *Efficiency* - Efficiency is defined as an effective operation as measured by a comparison of production with cost (Merriam –Webster dictionary). At the micro level a firm can gain competitive advantage over its rivals in two ways, namely cost advantage and differentiation (Porter, 1990). While lower costs mean the firm is able to produce and sell comparable products more efficiently than its competitors, differentiation is the ability to fulfil customer expectations, through providing unique products or services.
- *Productivity* – Clusters influence competition first, by increasing the productivity of its cluster members (Porter, 1998). It is the central element of the cost advantage and differentiation as main ways for gaining competitive advantage (Porter, 1990).
- *Cost effectiveness* - Geographical proximity decreases the transaction costs (for example the costs of delivery) in that all stakeholders in a value chain and other related institutions are close to each other. The transportation costs are reduced due to the shorter distances, which by definition reduces the risks and therefore the insurance costs. In addition the costs for obtaining information could be significantly reduced due to easy access to information about cluster members and their specific competencies and reliability (Preissl and Solimene, 2003, Pouder and St. John, 1996).
- *Profitability* – On average the companies in the industrial districts achieve better static or dynamic economic performance than the companies in non-Industrial District areas (Paniccia, 2002, Baptista, 2000).
- *Innovativeness* – A company's' survival depends heavily on its innovation capacity (Joyce and Woods, 2003, Zhao, 2009, Mattsson, 2009). Innovation is so related to the clusters that some authors define them on the bases of the innovation process. For example, Preissl and Solimene (2003) defined clusters as a set of interdependent organisations that contribute to the realisation of innovations in an economic sector or industry.

Chapter 3

3. Context Chapter

Before conducting comparative analysis on SME clusters and their influence on competitiveness of the cluster members, the context chapter describes the framework for economic development of the selected countries where cluster policies have been implemented. In the first section different definitions of SME as key drivers of cluster development will be provided, especially from the EU perspective. After presenting the main challenges of the transition process in the South Easter Europe, a review of the socio-economic characteristics of each country is provided, including how those characteristics have changed over time. This is followed by an overview of policies for entrepreneurship promotion and clusters development in each of the selected transition economies, including short description of clusters which have been taken in consideration in this research.

3.1 SMEs as a key driver for cluster development

Conducting comparative analysis on small and medium enterprises (SMEs) is in general challenging task, given the wide diversity and lack of standardization and coverage of various definitions. Since SMEs have been defined using different criteria across the countries and over a period of time, EU Commission has tried to provide a common standardized definition. The EU Commission (2003) adopted a new definition for SMEs in May 2003, which replaces the one developed in 1996. This definition has been in effect since 1st January 2005. The criteria for defining the size of SMEs according to the new definition include the number of employees, turnover and the value of total assets. Definitions of micro and small and medium enterprises as defined by EU Commission are presented in Table 3.1

Table 3.1 Definition of SMEs adopted by EU Commission in May 2003

Enterprise category	Max number of employees	Turnover	Or maximum total assets
Medium-sized	**< 250**	**€ 50 million** (in 1996: 40 million)	**€ 43 million** (in 1996: 27 million)
Small	**< 50**	**€ 10 million** (in 1996: 7 million)	**€ 10 million** (in 1996: 5 million)
Micro	**< 10**	**€ 2 million** (previously not defined)	**€ 2 million** (previously not defined)

Source: Recommendation of the European Commission No. 96/280/EC dated 3 April 1996. Official Journal issue L 124 (2003), Page No 36

Table 3.2 shows other SME definitions according to Eurostat, the Small Business Administration of USA, the Department of Trade and Industry in UK, and the Organisation for Economic Cooperation and Development - OECD (1997

Table 3.2 SME definitions

Definition by number of employees	Micro Enterprise	Small Enterprise	Medium Enterprise
EU	1-9	10 - 49	50 - 249
Eurostat	1 – 9	10 – 99	100 - 499
US Small Business Administration	1 - 19	20 - 99	100 – 499
UK Department of Trade and Industry	1 – 9	10 – 49	50 – 249
(OECD)	1 – 4	5 – 99	100 - 499

"All quantitative criteria should be used with care since it is especially important to take into consideration industry-specific differences" (Recklies, 2001, p.1). A certain number of employees in a particular industry might indicate that the subject of observation is a small enterprise, but an enterprise employing the same number of people in another industry might be considered differently. For example, a travel agency with 100 employees is large, compared to the average one, but a machine-building manufacturer with the same number of employees, however, would be considered as a relatively small

business. Thus for some industries, an enterprise must satisfy additional criteria in order to be considered a SME and for that purpose for example the American Small Business Administration (SBA) Act has developed different size standards for manufacturing firms as for service firms (SBA, 2004). Other criteria, such as balance sheet total and annual turnover, might be more useful for statistical reasons (Recklies, 2001).

Besides the number of employees and turnover, there are other measures that focus on special characteristics of SMEs, which distinguish them from larger corporations. In addition to numerous quantitative definitions, a variety of qualitative definitions can be found as well. The element that is common in most of them is the strong linkage between enterprise and owner. According to the Small Business Act introduced in American Public Law 85-536, a small business is "one that is independently owned and operated and which is not dominant in its field of operation" (SBA, 2004, p.6)

An additional requirement for small and medium enterprises according to the new EU criteria is their independence. In practice, this means that they may not transfer more than 25% of votes at the shareholders meeting or of the share in profit, shares, stocks, etc. (Recommendation of the European Commission 2003/361/EC , Official Journal issue L 124 (2003)).

In this research the EU definition of SMEs has been used, since in the process of EU integration the selected countries are adapting their legislation to the European one. It should be, however, taken into consideration that the EU definition of SMEs is not always appropriate for analyzing the SMEs in the countries to be researched herein, since their turnover is significantly lower than in the SMEs in the European Union and therefore the same definition will be used, but only with respect to the number of employees.

3.2 Cluster development in selected countries

SME sector and cluster concept have been widely researched in the developed countries. SMEs can be seen as a backbone of EU economy, since 99 % of all enterprises in the EU

are small and medium (Wumenga et al, 2011). There is an abundance of literature and history of practical experience in enterprises organising in clusters in industrialised countries; however, since this research tends to find if there is a correlation between clusters and competitiveness of cluster members in the selected transition countries, the following section will give an overview of the main similarities in the transition process in the selected countries, socio-economic characteristics of each of the selected countries, SME and cluster support policies, as well as cluster initiatives in Bulgaria, Republic of Macedonia (FYROM) and Serbia.

3.2.1 Main characteristics of the transition process in the SEE countries

All of the three analyzed countries, which are subject of this research, have undergone a transition process of extensive and complex structural and institutional changes, which have been aimed at creating conditions for establishment of free and prosperous market economy. When transition process started to be implemented in early 1990's, it was expected that the rapid development of liberal market mechanisms would contribute to a great extent towards solving all problems related to restructuring. After a negative experience with strictly regulated planned economies, the policy makers from the selected transition countries have developed their economic policies around neoliberal economic model, which implies reducing the role of the government and the public sector to a minimum. In that time it was considered that a free market economy and private entrepreneurship, unrestrained by the state interference, would best meet the needs of their societies.

Neoliberals base their conceptions on the view that the market represents the key institution in modern capitalist societies, and consequently, the overall activity aimed at creating conditions that will be beneficial for functioning of the markets. In this context, the whole course and pace of implementation of the institutional arrangements of economic space in the transition countries was primarily used to create conditions for establishing a market mechanism and respect market principles in line with free market paradigm. The neoliberal concepts and policies have been supported by both, neoclassical

economists, on the view that the market represents the key institution in modern capitalist societies, and influential international factors, primarily the IMF. Despite numerous warnings (Kolodko, 1998), due to the influence of the Washington Consensus, the intensive implementation of the market system was conducted without any participation of market institutions and importance and role of institutions as non-material prerequisites of growth have been stressed by institutional economists (North, 1991) .

The fact that the economy can function on the principles of economic liberalism only in conditions of developed and efficient market and institutional infrastructure (which was not the case in each transition country) was disregarded and such approach can be considered as one of the key reasons for large transition costs and social tensions that were present in almost all transition countries during the most part of the implementation process of their socioeconomic reform (Lekovic, 2012). Neglecting the non-economical, human, social and environmental consequences of economic decisions, combined with the lack of institutional control results in market failures, can results in suppression of economic freedom and fair competition (Draskovic, 2010). This was also supported by Popov (2007), who argued that an institutional vacuum can result in catastrophic decline in production. Thus, the majority of transition countries are faced with insignificantly low rates of economic growth, unemployment growth, increasing poverty and an extremely high level of debt (Leković, 2012).

3.2.2 Socio-economic characteristic of Republic of Macedonia (FYROM)

Republic of Macedonia (FYROM) started restructuring both, the economic and political systems in the early 1990s. Several external and internal shocks hampered those complex processes – the trade embargo imposed by Greece in 1993, the sanctions imposed by the United Nations against Serbia in 1995 (the main trading partner at the time), the internal conflict of 2001, as well as domestic economic shocks, including the privatization process. At the onset of the transition to a market economy, the country was the least developed republic within the ex-Yugoslavia, with the highest unemployment rate

amongst all socialist countries (about 20 per cent in 1990). The initial transition years were characterized by declining production and employment. Initially, the lowering of Gross Domestic Product (GDP) was mainly driven by a large decline in industrial output. The country was able to reach the pre-transition level of GDP only in 2006 (Mojsoska-Blazevski, 2011). The main feature of the transition period is the shift in value added from industry towards services, with resources increasingly allocated to non-tradable sectors at the expense of manufacturing.

Economy of Republic of Macedonia (FYROM) has a poor record of attracting FDIs compared to other countries in the region. For instance, while in 2012 FDI level in Republic of Macedonia was 72 MEUR, Bulgaria and Serbia attracted 1.480 MEUR and 274 MEUR respectively (Vienna Institute for International Studies, 2013)

The economic situation deteriorated markedly in 2012. GDP declined by 0.4% in 2012, after an expansion of 2.8% in 2011. Private consumption remained sluggish, decreasing by 1.2%. Investment growth proved resilient at 12.1%, and was boosted by an end-of year boom in government capital spending. Yet, the positive contribution of domestic demand to output growth was more than compensated by the drag from external demand. While goods exports recovered somewhat in the second half, in the full year they were below their level of 2011. Given a slight rise in imports, possibly driven by increased import demand of newly established foreign investment, trade deficit widened marginally in 2012. Inflation relented somewhat, to 3.3% from 3.9% in 2011, mainly on account of weaker price increases in food, and in housing and utilities costs.

There was a slight increase in employment in 2012, and the average unemployment rate for the year came down to 31%, from 31.4% in 2011. In light of the economic deterioration, this was probably in part a statistical effect, on account of an increase in the labor force due to new registration of previously informally employed workers. Yet, there was no improvement in the labor market situation for young people. 54% of the labor force between 15 and 24 years old were registered as unemployed.

According to the European Economic Forecast, spring 2013 (European Commission (2013) employment growth will accelerate marginally in 2013 and pick up further in 2014, in line with the acceleration in output growth, while the unemployment rate is projected to decline further and reach 30% in 2014. Wage growth is likely to remain subdued, given the need to remain competitive. The forecast assumes that the authorities will meet the 2013 general government deficit target of 3.6%. Central government debt is projected to rise by some 4 pps. over the forecast horizon, mainly on account of a continued negative primary balance.

3.2.3 SMEs and cluster policy in the Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) in the early transition years, small and medium enterprises were not clearly defined. The Law on accounting (1993) distinguished small and large enterprises only. The Law defined small enterprises as those that have less than 250 employees, while the rest were considered as large enterprises. On the other hand, the Law on Transformation of Enterprises with Social Capital (1994) defined small, medium and large enterprises based on the number of employees, annual income and total value of business assets. In 2004, with amendments of the Law on trade companies, the Republic of Macedonia (FYROM) has finally accepted official EU criteria for defining the enterprises according to their size taking in consideration: the number of employees, annual turnover and value of business assets.

The Central Registry (CR) and the State Statistical Office (SSO) are institutions recording data on SMEs, which are used as the sources for information of the SME Observatory, follow the classification criteria of these law. According to this legislation, those entities that are not classified as small or medium-sized entities acquire the status of large-sized entities.

The definitions of SMEs in European Union and Republic of Macedonia (FYROM) are presented in Table 3.3

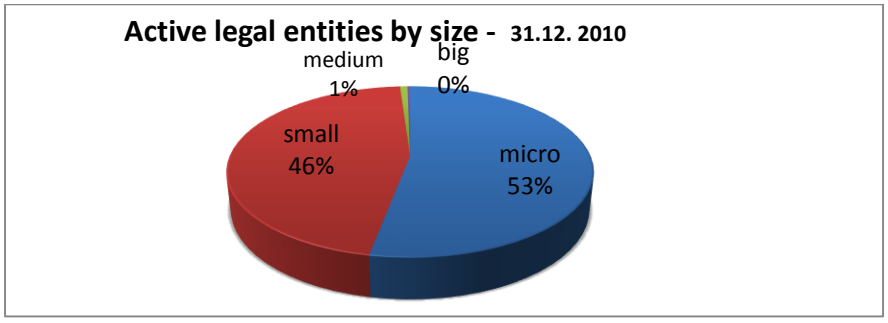
Table 3.3 Criteria for classification of the companies by size in EU and Republic of Macedonia (FYROM)

	EU definition	Law on trade companies (2004)
Micro	Up to 10 employees	Up to 10 employees
	Annual turnover ≤ € 2 millions	Annual turnover < € 50.000
	Value of balance sheet ≤ € 2 millions	Maximum 80% from the gross income to be produced by one client
Small	Up to 50 employees	Up to 50 employees
	Annual turnover ≤ € 10 millions	Annual turnover ≤ € 2 millions
	Value of balance sheet ≤ € 10 millions	Value of balance sheet ≤ € 2 millions
Medium	Up to 250 employees	Up to 250 employees
	Annual turnover ≤ € 50 millions	Annual turnover ≤ € 10 millions
	Value of balance sheet ≤ € 43 millions	Value of balance sheet ≤ € 11 millions
Large	All others which are not fit in the above mentioned classification	All others which are not fit in the above mentioned classification

Source: MoE, Programme for development of entrepreneurship, competetiveness and innovation of SME (2007 – 2010), p.13

SMEs in Republic of Macedonia (FYROM) are one of the driving forces of the country's economy. Generally speaking all relevant economic sources of information coincide in that around 99% of all active enterprises in the country are small or medium. The importance of SMEs is evident by the fact that in December 2010 out of 75.497 companies, 39.999 were micro companies, 34.702 small, 584 medium and only 212 large companies. (See Figure 3.1)

Figure 3.1 Active legal entities by size in Republic of Macedonia (FYROM)



Source: State Statistical Office of Republic of Macedonia (FYROM), Statistical Yearbook of the Republic of Macedonia 2011, June 2011, p.474.

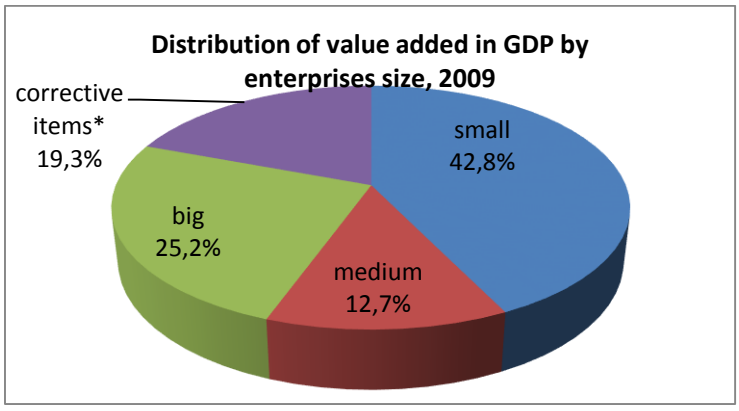
The importance of the SME sector for the economic development can be measured by using the following indicators:

- participation of SME sector in employment creation,
- participation of SMEs in creating added value and
- participation of SMEs in the creation of gross domestic product.

Regarding the *employment creation* indicator it is evident that SMEs have dominant role in the overall employment structure. Before the independence of the country (1991), the contribution of the small businesses in employment creation was 13.2%. (Tripkov, 1994). After independence, measures for SME support have contributed the number of employees in the SME sector to increase significantly. In 2005 the SME sector employs more than ¾ of the total number of employees or expressed in percentage - 75.7%. From the perspective of the regions, small enterprises are the largest employer in all 8 regions and their participation ranges from 48% in the Vardar region to 79% in the Southwest planning region. (MLS, 2011)

Gross value added (GVA) is an indicator of the economic prosperity. It measures the contribution of each of the producers, industry or sectors to the overall economy. On the basis of this indicator, SMEs create 55.5% of the value added in GDP by enterprises size (See Figure 3.2).

Figure 3.2 Structure of GVA in 2009 by enterprises size in Republic of Macedonia (FYROM)



*Corrective items consist of imputed rents; value added tax, import duties and subsidies on products
Source: State Statistical Office of Republic of Macedonia, Statistical Yearbook of the Republic of Macedonia 2011, June 2011, p.474.

According to the third indicator: *participation of SMEs in GDP* compared with 1987 when the participation of small businesses in GDP was only 5.2% , in 2000 it amounted to 53.6%, and in 2004 increased to 68.6% (APERM, Observatory for SMEs - Report for 2005 , p.15)

The Government based its SME support policy on the following strategic documents: Strategy for Development of SME, Act on SME Development Support, Law on Macedonian Guarantee Agency, Law on Realisation of Handicraft Activities, and National Policy for Development of Technology. All these documents are aiming at facilitating the establishment of a favourable institutional, legislative, administrative and financial environment for setting up and development of SMEs in the country. Furthermore, the macroeconomic (political, legal, and economic) framework conditions are also fundamentally important for the overall performance of the economy.

Adoption of the first National Strategy for Development of SMEs for the period 2002 - 2012, indicated that SMEs are one of the main priorities of economic policy. It defines the basic institutional structure of SMEs.
At the national level the main institutions responsible for SME promotion are:

- Department of Entrepreneurship and Competitiveness at the Ministry of Economy, responsible for creating and overseeing the implementation of policies for SMEs.
- Agency for Promotion of Entrepreneurship of the Republic of Macedonia (APERM), responsible for implementing National SME policy
- National Council for Entrepreneurship and Competitiveness (NECC) – it was established with a main goal of improving the business environment in the country and it serves as a platform for public private dialogue
- Other line ministries responsible for certain aspects relating to policies for SMEs, such as the Ministry of Finance, Ministry of Education and Science, Ministry of Transport, Ministry of Labour and social politics.

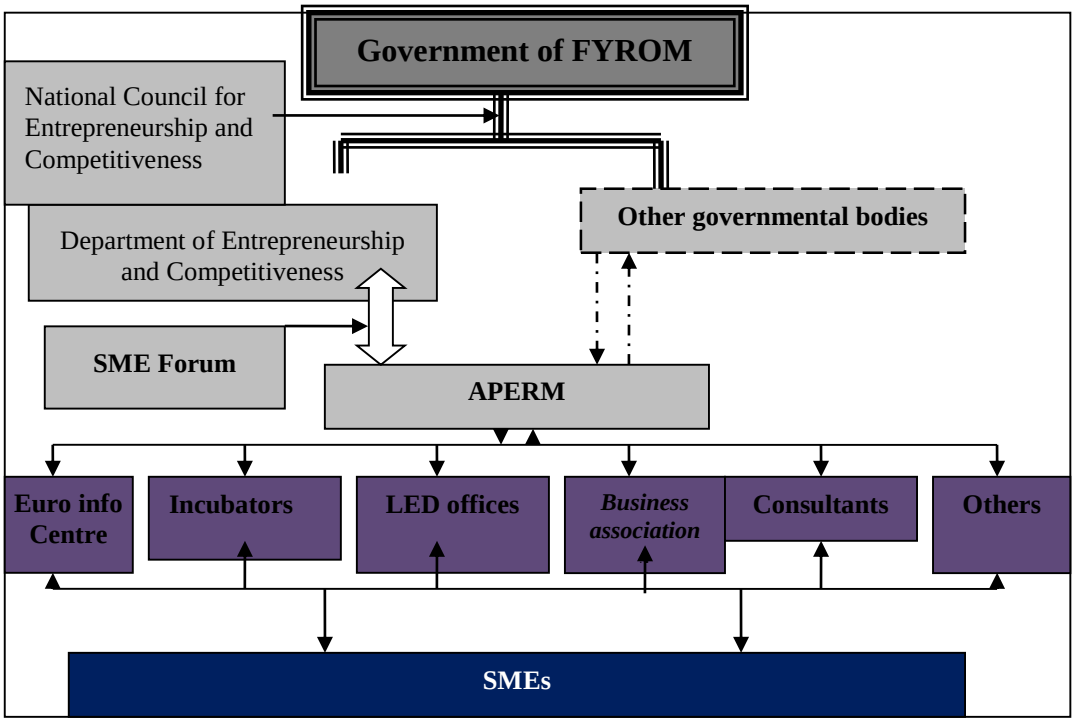
- The Economic Chamber of Republic of Macedonia (FYROM) The activities are focused on improving the business climate, organizing, business meetings and lobbying for the interests of the private sector
- Union of Chambers of Commerce (UCC) - it has been established in 2004 with a mission to increase the competitiveness of its members, improving the business climate in the country.

Main institutions for SME support at regional/local level are:

- Business incubators
- Euro Info Centre (EICC), which provides information and assistance on matters related to business in the EU
- Local Economic Development (LED) departments within the municipalities
- Centres for Regional Development – in eight planning regions
- Providers of consulting services for SMEs
- Business associations, etc. (Government of RM, 2007, p.3-5).

The Figure 3.3 presents the institutional set up for SME support on both national and local level.

Figure 3.3 Institutional infrastructures for SMEs in FYROM



Source: Government of the Republic of Macedonia (FYROM), Programme for

development of entrepreneurship, competitiveness and innovation of small and medium sized enterprises (2007 2010), Skopje, 2007, p. 5.

Under the PHARE program in 1999 in Republic of Macedonia (FYROM), five regional SME support centres were established, being located in Skopje, Kumanovo, Veles, Gostivar, and Strumica. They were directly financially supported by donor programs until the end of 2002. The initial goal of the regional centres was to promote and enhance the entrepreneurial spirit in the region and to assist small business owners in completing loan applications. The regional centres used to provide the following SME support services: information, professional advice, advocacy, training, assistance in business plan preparation, market research, etc. After 2002 these centres continued to operate as independent institutions providing similar services, but on a commercial basis.

In Ohrid, Gostivar and Tetovo, Enterprise Support Agencies (ESAs) were established as foundations in 1997, 1998 and 1999 with the technical assistance from the British Know How Fund / DFID. "All of them are now self-financing organizations, trying to survive by selling their services to SMEs, local and national authorities, as well as international donors" (MoE, 2006). In addition the Swiss Development Corporation funded setting up of Prilep Region Enterprise Development Agency (PREDA) in 1998, aiming at supporting SMEs in Pelagonija region through increasing capacities of business service providers on the local market. In 2004 APERM started to provide project based financial support to the SME support centres. In 2007, the APERM supported the establishment of two additional SME support centres and in Radovis and Kriva Palanka. (MoE, 2008a, p.21).

Under the Program for development of entrepreneurship, competitiveness and innovation of small and medium enterprises of the Ministry of Economy, in 2008, ten new SME support centres have been established (Sveti Nikole, Demir Hisar, Probistip, Delcevo, Lipkovo, Valandovo, Vinica, Stip, Bogdanci and Struga). They were located within the municipalities where no SME support centre existed. The Government through the MoE and the APERM has supported newly established SME centres by providing:

- funds for IT and other electronic equipment for the operation of centres

- regular trainings for the managers aiming at strengthening their capacity for providing needs oriented services;
- networking opportunities;
- assistance in implementation of projects through APERM and other donors;

The Government has also foreseen setting up of eight new regional centres for support and advisory services for SMEs in all eight regions of the Republic of Macedonia until the end of 2013 (Government of RM, 2011).

As of June 2003 the Republic of Macedonia (FYROM) became a member of the European Charter for Small Enterprises (2000). By becoming a member, the country has committed to realize progress in the ten areas covered by the Charter. Based on information given by institutions responsible for SME development, the European Commission prepares annual progress report according to Small Business Act (SBA), which is EU initiative for support of SMEs. Annually updated factsheets contribute to better understanding of the trend in the SME policy on national level. In Republic of Macedonia (FYROM) in 2010 the situation is the following (European Commission, 2011, SBA Fact sheet 2010/2011, Former Yugoslav Republic of Macedonia (FYROM)):

- In the area of *"Entrepreneurship",* Republic of Macedonia (FYROM) has shown better performance than EU average in: Entrepreneurial intention (% of adults who intend to start a business within 3 years – FYROM 26.7%, EU average.11.08) and media attention for entrepreneurship (FYROM 56%. EU average 51.35%). Republic of Macedonia (FYROM) is below the EU average in share of adults who agree that successful entrepreneurs receive a high status (FYROM 66.2% and EU average 51.35%).

- In the area of *"Second change"* Republic of Macedonia (FYROM) for the time being has not foreseen and implemented any activities to help re-starters to be treated on an equal footing with new start-ups. Also costs to close a business are much higher than the EU average, 2011 (FYROM 28%, EU average 10.78%)

- In the area of *"Think small first"*, for the business assessment of the general burden of government regulation, FYROM is in line with EU average. The Government in Macedonia in 2010 has adopted 46 new measures for improving the business environment which were based on 88 proposals given by 210 companies.

- In the area of *"Responsive administration"* Republic of Macedonia's (FYROM) performances are better than EU average in: period needed to start a business (in FYROM 3 days, while the EU average is 14.26 days), costs for starting a business (% of income per capita) (FYROM 2.5%, EU average 5.47%), time required to comply with major taxes (hours per year), 2011 (FYROM 119, EU average 218.04). FYROM costs for enforcing contracts in relation to the total claim sum (33% to 21 for EU) are below the EU average and it is among the highest for all 37 countries. It also takes much more time to transfer the property than in EU (58 to 34 days in EU)

- In the area of *"State Aid and Public procurement"* the Government has initiated a number of actions such as: establishing Electronic System for Public Procurement, e auctions and etc., but there are no more statistical information available.

- In the area of *"Access to finance"* the only indicators available for FYROM are the strength of legal rights and depth of credit information and they are in line with EU average. In 2010 there were no special credit lines for supporting SME's.

- In the area of *"Single market"* only a few measures were initiated.

- In the area of *"Skills and innovation",* Republic of Macedonia (FYROM) is below the EU average in: SMEs introducing marketing or organizational innovations (% of SMEs) 2008; (30.8 to 39.9 in EU), SMEs innovating in – house 2008 (% of SMEs – 11.3 to 30. 25 in EU), innovative SMEs collaborating with others (% of SMEs in 2008, 9.6 to 11. 16 in EU), SMEs participating in EU funded research(number per 100.000 SMEs in 2011 – 0.3 to 20.95 in EU). FYROM is

better than in EU average only in SME introducing products or process innovations (% of SMEs – 39.2 to 34.8% in EU). As part of this area, Republic of Macedonia (FYROM) in 2010 has elaborated a Program for support and Development of Cluster Associations with a main objective to encourage the SMEs to internationalize and become high growth enterprises through participation in innovative clusters.

- In the area of *"Environment"* and *"Internationalization"* there were a little actions taken by the Government.

Republic of Macedonia (FYROM) has adopted another strategic document - "Industry policy in Republic of Macedonia 2009 – 2020" for increasing the competitiveness of the national industry and economy in general, through coordination the competiveness policies in the country. The industry policy aims at contribution to more intensive development of national industry through undertaking actions in the following five main areas:

- International cooperation and attracting FDI
- Applied researches, development and innovations
- Eco products and services for sustainable development
- SME development and entrepreneurship and
- Cooperation in clusters and other networks

3.2.3.1 Clusters in Republic of Macedonia (FYROM)

The first cluster initiatives emerged in Republic of Macedonia (FYROM) in the early 2000's, but the government supports cluster development more intensively starting from 2007, through its cluster support program under the Ministry of Economy (MoE). Since then nineteen clusters have been officially institutionalized in the country, through different forms of registration. They are all presented in Table 3.4 (MoE, 2013), taking in consideration their membership size, number of employees in the cluster and year of establishment:

Table 3.4 Clusters initiatives in Republic of Macedonia (FYROM)

	Name of the cluster	Number of members	Number of employees	Year of establishment
1.	Milk and meat cluster and	24	2,637	1998
2.	IT cluster – MASIT*	73	2,000	2000
3.	Textile cluster - TTA-TC*	65	11,500	2003
4.	Agro Helix – Escargot cluster	24	80	2005
5.	Macedonian Fashion Formation	15	15	2005
6.	Wine cluster – TWR Tikves Wine Roads*	36	459	2006
7.	Cluster for processing of fruits and vegetables - MAP	26	854	2007
8.	Wood processing cluster - CDI	56	1,350	2007
9.	Agricultural mechanization – BIPOM-M	29	700	2007
10.	Automotive cluster	29	2,500	2008
11.	Osogovo tourism cluster	11	20	2008
12.	Confectionery cluster	29	1,500	2010
13.	EDEN - Tourism Cluster of Southwest Region*	35	350	2010
14.	Tourism cluster in Polog region – Shari**	15	80	2011
15.	Rice Cluster**	17	30	2011
16.	Milling and Baking industry Cluster**	10	400	2011
17.	Agronomy cluster **	8	400	2011
18.	Seeds cluster**	5	200	2011
19.	Honey cluster – Mac Bee**	16	25	2012
Total number in 2013		**523**	**25,100**	
Total number in 2011		**462**	**23,965**	
Total number of cluster members of active clusters in 2011		**209**	**14,309**	

Key: * Cluster members participated in the survey, ** Clusters that have been established after the collection of the survey questionnaires

The Table 3.4 provides an overview of all of the cluster initiatives that operated in Republic of Macedonia at the end of 2013, based on the information from Cluster Atlas that was elaborated in 2013 on behalf of the Ministry of Economy. In the first column the number of cluster members is presented, while the next one provides information about the number of employees, as indicators of the size of the cluster and importance for national economy. However, it should be stressed that besides the number of cluster members and number of employees, there are other indicators of significance of a certain cluster (Secep, 2010), but they are not a subject of this research. Based on the year of cluster establishment, which is presented in the last column, a distinction between cluster initiatives that were in function during the survey period and new ones can be made. Out of 19 existing clusters initiatives that are active by the end of 2013, six have been established either during the last phase of collection of survey questionnaire or after the questionnaires have been collected.

These clusters are at different stages in their life cycle and therefore need specific support which takes in consideration their stage of development, especially because the development of the cluster through the different stages is not only quantitatively described by a growth and decline in numbers of firms and employees, but also qualitatively by the diversity and heterogeneity of knowledge (Menzel and Fornahl, 2007).

The key weaknesses of all existing Macedonian clusters are the lack of potential for innovation and developing new products and services for better competition in global markets. Existing clusters were formed for "grouping the small enterprises" to better selling in global markets and they have achieved very little in sharing and creating economies of scale in purchasing, the applicable research and development and innovation.

The cluster members that have been surveyed in this research participate in the following clusters:

Textile: **Textile Trade Association – Textile cluster (TTA-TC)** is a non-profit NGO, which primary goal is improving companies' competitiveness, as well as adjusting the

participants' own production to the new trends and changes. The "Textile Trade Association" and "textile cluster" were merged in 2006 into a single association "Textile Trade Association - Cluster textiles" (TTA-Cluster textiles). In order to achieve its vision the "TTA - Textile Cluster" has identified several priority areas which are tackled through separate working groups:

- Marketing and promotion
- Production
- Human resources
- Relations with government
- Joint procurement (TTA, 2006)

Main activities services provided by the TTA – TC are the following:

- Collection and dissemination of information.
- Development of information source for its members – databases on:
  - Market specifications of target countries;
  - Market trends (fairs and exhibitions reports);
  - Potential suppliers of raw materials and accessories;
  - Quality certifications;
- Organization of educational and training seminars for its members.
- Development of infra-structure for an independent self-controlled and self-monitoring training centre for:
  - On the job training of students coming from textile schools and institutes;
  - Continuous training and skills improvement of operators;
  - Continuous training of supervisors;
- Facilitation of contacts between members and foreign buyers.
- Participation in European Union projects beneficial to its members.
- Organizing visit of fairs, shows, and commercial events.
- Publishing, advertising and bulletins in order to popularize the activities of TTA-CT and its members. (TTA, 2006)

TTA-TC cooperates with all relevant institutions concerning issues related to resolutions and legislation that have influence on the textile industry, such as:

- Industrial policies;
- Research and innovations;
- Business environment;
- Social issues;

Textile cluster has participated in two IPA CBC EU projects, with Greece and Bulgaria and in two regional projects with partners from Belgium, Germany, Serbia, Croatia, Albania, Kosovo, Bulgaria and BIH.

Information Technology (IT): The ICT cluster is registered as a Chamber of Commerce for information and communication technologies (MASIT).
As a voice of the national ICT industry MASIT represents 80 companies: software and IT services companies, hardware distributors and other telecom companies, training providers and ICT consulting companies. MASIT members include about 80% of the domestic ICT market. As defined under a statute, the activities are implemented through the following working committees:

- Committee for hardware – consisting of hardware companies and distributors of hardware
- Committee for software and IT services - software and IT services companies
- Committee for electronic Communications
- Committee for domestic ICT market – addresses issues such as competitiveness, developing local markets, event planning, participation in EU projects, education, workforce development, etc.

As a result of the initiative launched in November 2011 by some of the MASIT members a new "cluster for the implementation of ICT solutions to increase the competitiveness of Small and Medium Enterprises (SMEs)" was set up under the existing structure of MASIT, which deals with implementation of information - communication technologies especially in small and medium enterprises. The focus of this "sub-cluster" of MASIT is educating small and medium enterprises how to become more competitive at the market and sell their products and services through the use of ICT technologies.

The establishment of the cluster represents an important strategic measure to overcome the limitations of resources and enabling software companies to jointly focus on new

market segments in the domestic and international market. Furthermore, the creation of cluster is supposed to contribute towards achieving greater visibility and more effective branding and allows pooling of competencies and cost savings in software development and IT services. The activities of the cluster are correlated with the contract for allocation of financial resources for implementation of the program (project) for cluster associations that MASIT signed with the Ministry of Economics in October 2011 (MASIT, 2011).

Tourism Cluster of Southwest Macedonia – EDEN was established in 2011 and consists of 35 members (medium sized 4, small entities16, supporting institutions 15) - hotels, restaurants, agencies, crafts, non-governmental organizations, educational institutions, health food manufacturers, transport companies and sports clubs. Cluster works towards strengthening the cooperation in the field of tourism between the business communities, public and civil society, creating synergy, development and implementation of joint projects activities in the following strategic areas of intervention: education and awareness, clearly defined supply and promotion, collaboration/networking organizational development and capacity building, sustainability. The vision of EDEN cluster is to make Ohrid and the Southwest region of Macedonia, a world-attractive destination with high quality offer, based on preserved heritage, untouched nature, expressed authenticity and traditional hospitality. Main joint activities and projects that have been implemented so far are:

- Promotion of active tourism in the Southwest region, "revealed the nature, try the tradition,"
- Cross-border bicycle race around lake Ohrid in partnership with Ekodrom
- Measuring innovation capacity of the tourism cluster of Southwest Macedonia (MoE, Cluster Atlas, 2013)

Tikvesh Wine Route Cluster is a cluster of wine and tourism, established in July 2006 by four local governments (Kavadarci, Negotino, Rosoman and Demir Kapija) and representatives from the private sector. The Cluster comprises of 36 representatives of the private sector, such as wineries, food processors and travel agencies, than NGOs, institutions and museums, with total number of 459 employed. It is supported by the Ministry of Economy, Ministry of Culture, Ministry of Agriculture, Forestry and Water

Management and the Faculty of Tourism in Ohrid. Main products that characterize the cluster are wine, wine tours, various types of alternative tourism, souvenirs, catering services and traditional cuisine.

For achieving its vision of becoming a leader in the wine roads of South East Europe Tikves Wine Road Cluster concentrate on the following priority fields: development of the wine roads in the Republic of Macedonia, establishing standards and criteria for the operation of the wine roads, development the infrastructure, promotion of foreign markets, participating in international networks of wine roads, education and development of alternative tourism in the Tikveshh region. Since its establishment the cluster members have been involved in the following joint activities:

- Organizing promotional activities, such as brochures, media promotion of the region, organizing conference on Wine Routes
- Setting up tourist info centre
- Capacity building activities – training on different topics, study tours
- Organization of local tourism event Saint Tryphon,
- Implementing projects - “Food, Wine and Tourism in Common Product and Promotion", "Promotion of Concept of Cluster Membership and Spreading", "Measuring Innovation Capacity of Members and Potential Members of the Cluster." (MoE, Cluster Atlas, 2013)

According to the Industrial Policy of the Republic of Macedonia 2009-2020, Macedonian companies show the greatest intensity of cooperation with their suppliers (score 3.71 on a scale from 1 = low to 6 = strong. Intensity of cooperation with customers is similar (3.67). Much lower intensity of cooperation companies have with their competitors (2.23). In all three types of cooperation, exchange of information is the most important aspect of cooperation, followed by technical expertise, training and joint development of the products and services. Intensity of cooperation with suppliers and customers is higher in companies with dominant foreign ownership and export-oriented companies and they are more aware of the benefits of networking.

The main strategic document for cluster policy in the country is "Industrial Policy of the Republic of Macedonia 2009-2020". It defines measures for support cluster development, which focus at:

- Increasing the awareness and training for clustering / networking – through trainings, study tours, regional and international conferences and organizing networking events.
- Supporting clusters in developing strategies and development programmes, action plans and specific projects - through co – financing
- Strengthening the partnerships in the chain of suppliers. A key aim of these measures is to improve the competitive capabilities of domestic SME suppliers and to increase the cooperation between large export oriented companies and domestic suppliers.
- Encouraging technological centres and parks on a regional level, support Networking of institutions for research and development - (MoE, 2009, p.76-80)

As of 1st of January 2013 the Programs for support of cluster development, SME support and Industrial policy, which are implemented by the Ministry of Economy, will merge into a new Program for competitiveness, innovativeness and entrepreneurship. The budget foreseen for 2013 is 15 million MKD (250.000 EUR).

3.3.1 Socio-economic characteristic of Serbia

Although during the whole transition process the Serbian government policies have focused on fundamental economic reform and restructuring of industry, the country continues to experience economic development constraints. Enterprise restructuring has been delayed, foreign direct investment is mainly privatization focused, a large increasing trade deficit and large current account deficit still exist, unemployment remains high (23, 9% in 2012) and there are serious mismatches between labor demand and supply. At present investments in new equipment, technologies and human resources, essential to Serbia's medium to long-term economic well-being, are not being made on a meaningful scale (Secep, 2010).

Serbia is a relatively small market with a low purchasing power, and SMEs have to look to markets beyond national borders to increase exports. Too many firms are ill-prepared to compete in export markets primarily due to a lack of market knowledge, outdated equipment /technology, and insufficient access to affordable finance (Secep, 2010). Number of issues need to be addressed in the short to medium term so as to enhance competitiveness and allow Serbian enterprises to compete internationally (Secep, 2010). Companies with growth prospects and export potential are currently held back by the limited management capacity across a wide range of areas (e.g. finance, production, marketing, standards, export planning, product design, etc.). On the other hand, Serbia possesses a number of strategic competitive advantages including; knowledge of and access to regional and international markets; excellent agricultural conditions; a strategic location on major European land routes and a major waterway; relatively low labor costs, and potential for tourism. Trade agreements with the European Union and (uniquely) with Russia, together with being a signatory of the Central and Eastern European Free Trade Agreement (CEFTA), offer substantial opportunities.

The government aims to develop a strong domestic private sector, using the SME sector as the key to economic regeneration. The "Strategy for Competitive and Innovative Small and Medium-sized Enterprises 2008 – 2012", recognizes the need to strengthen the private sector and make it internationally competitive through the development, inter alia, of management capacities, introduction of quality systems into business operations and fostering innovation and up-to-date technology. Serbia is also a signatory to the European Charter for Small Enterprises and regards the Charter provisions as an integral part of its SME policy.

The Serbian government has established the National Council for Competitiveness under the direction of the Office of the Deputy Prime Minister and a "Strategy for Competitive and Innovative Small and Medium-sized Enterprises 2008-2012", has been developed to address the identified weaknesses and give a major impetus to the expansion and competitiveness of Serbia's SMEs. Relevant Government structures for strategy development and implementation include the MoERD departments for SME Development and Competitiveness; SIEPA, SASME and the inter-Ministerial SME

Council. The MoERD is responsible for enterprise development, privatization, restructuring, tourism, trade development, FDI, exports, employment policy, national employment service.

Due to very weak domestic demand, economic activity deteriorated sharply in 2012. Private consumption, in particular, is decreasing for a fourth year in a row. However, following a steep fall in the first half of the year, net exports turned positive as imports growth decelerated strongly and since the opening of a Fiat car assembly factory in the summer 2013, exports of goods have accelerated substantially (European Commission, 2013). According to the European Economic Forecast, (European Commission, 2013), after double-digit growth in 2013, exports are expected to remain robust also in 2014, despite a marked deceleration in their growth. However, driven by stronger demand, imports would slowly start catching-up, bringing net exports contribution to growth close to zero in the outer year. In line with the projected slow recovery, employment is expected to stabilize in the second half of 2013, and register some small gains only in 2014.

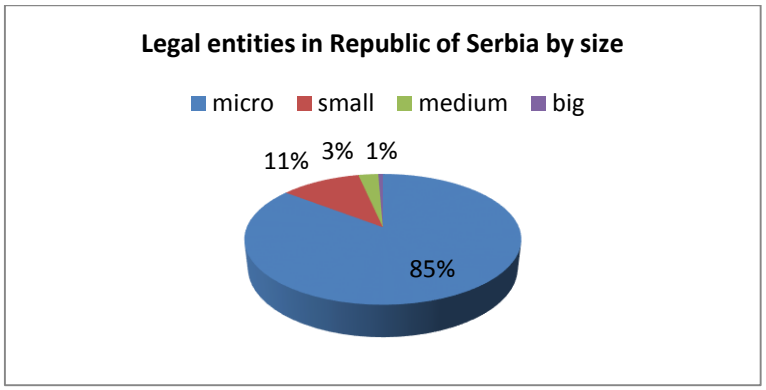
Although the dinar remained stable since early 2013, the inflation remains inherently volatile, influenced by weak competition in key sectors and irregular adjustments in administered prices (European Commission, 2013). According to the European Economic Forecast, (European Commission, 2013), in the absence of a credible medium-term consolidation strategy and without further measures, the current government target for a deficit of 1.9% of GDP would be clearly unattainable and government debt would continue rising. Delays in structural reforms could also build up pressures on the expenditure side of the budget, which could lead to higher expenditure demands, accumulation of implicit liabilities in the public sector and increase debt in the medium term.

3.3.2 SMEs and cluster policy in Serbia

Serbia has accepted EU criteria for defining the enterprises according to their size depending on: the number of employees, annual turnover and value of business assets. The importance of SMEs in Serbia is evident by the fact that in 2009 out of 82,355

companies, 70,340 were micro, 9,202 were small, 2,289 medium and only 524 were large companies (See Figure 3.4) (State Statistical Office of the Republic of Serbia, 2011, p. 189). It is evident that similar to the situation in the EU, in Serbia SMEs represent over 99% of all enterprises. Regarding the form of legal entities, most of the SMEs in Serbia are registered as Limited Liability Company (Ltd). (OECD, 2010, p.21)

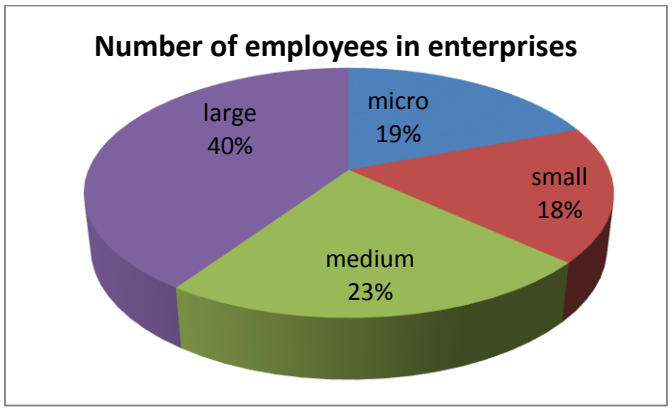
Figure 3.4 Active legal entities by size in Serbia



Source: State Statistical Office of the Republic of Serbia, Statistical Yearbook of the Republic of Serbia 2011, 2011, p.189.

The SME sector in Serbia is important in terms of both, employment and participation in GVA (gross value added). Out of the total of 1,066,124 employees: 205,323 are employees in micro enterprises, 186,861 in small, 242,034 in medium and 431,906 in large companies. (State Statistical Office of Serbia 2011, p.191) (see Figure 3.5)

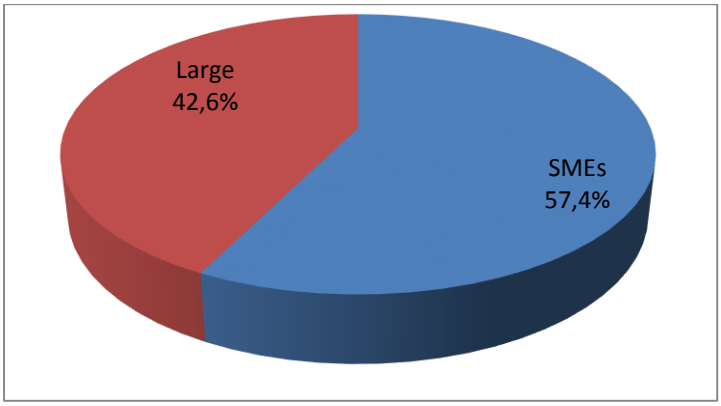
Figure 3.5 Participation of the SME sector in creating employment in Serbia



Source: State Statistical Office of the Republic of Serbia, Statistical Yearbook of the Republic of Serbia 2011, 2011, p.191.

The non-financial business sector of Serbia achieved 1,427.6 billion. RSD gross value added in 2009. The greatest influence on the generated GVA generated, as in previous years, has SME sector (57.4%). (See Figure 3.6) (MERD, November 2010, p.25).

Figure 3.6 Structure of GVA in 2009 by enterprises size in Serbia



Source: Ministry of economy and regional development, Report on Small and Medium Enterprises and Entrepreneurship for 2009, November 2010, p.25

The increasing role of the SME sector is evident in terms of turnover, Gross Value Added (GVA), imports, exports and investments. From the table 3.4 it is evident that there is a permanent increase of the turnover (from 65.5% in 2005 to 67.6% in 2007), GVA (from 54.1% in 2005 to 58.3% in 2007) and export (from 39.6% in 2005 to 50.2% in 2007).

Table 3.5 Level of SME development (non-financial sector, 2005 – 2007)

SMEs				Share of SMEs in non-financial sector (%)		
	2005	2006	2007	2005	2006	2007
No of enterprises	276,695	268,515	296,086	99.7	99.8	99.8
Turnover, billion RSD	2,772	3,589	4,107	65.5	67.5	67.6
GVA, billion RSD	467	592	720	54.1	56.9	58.3
Export billion RSD	115	182	226	39.6	43.6	50.2
Import billion RSD	391	503	651	64.0	59.2	64.0
Investment billion RSD		197			51.2	

Source: OECD, National and Regional Small and Medium sized enterprises Policy Linkage in Serbia, 2010, p.22

Institutional infrastructure to support SMEs in the Republic of Serbia consists of a network of public institutions and agencies headed by Ministry of Economy and Regional Development:

- National Agency for Regional Development (NARD),
- Development Fund
- Serbia Investment and Export Promotion Agency (SIEPA)
- Serbian Export Credit and Insurance Agency (AOFI) and
- National Employment Office (NES).

Since 2009 Serbia is active in the Enterprise Europe Network (EEN), which operates within a consortium led by National Agency for Regional Development (NARD). EEN provides good opportunity for Serbian SMEs for obtaining valuable information and services for business development in the EU market support for finding business partners, innovation and technology transfer and participation in EU programs. Serbian Chamber of Commerce, with its network was also active in supporting the development of this sector.

National Agency for Regional Development with its network of 15 regional agencies (centres) for SME development, as part of broader regional development activities, provides intensive support to SMEs. At the regional and local level a network of regional development agencies, as well as various organizations and institutions specialized in support of SMEs, such as business incubators, clusters and others have been established.

Business incubators are very important part of business infrastructure because they contribute to improving of the business environment for SME development, by actively seeking to provide start-ups resources, services and support they need. The literature suggests (Tötterman and Sten, 2005) that business incubators can support new potential companies in their development process by giving them credibility, but also by helping them to build promising support and business networks. Tötterman and Sten (2005) argue that support that focuses principally on financial capital is not the key aspect that business

incubators should focus on when supporting entrepreneurs who try to develop a viable business. The first business incubator was open in Serbia in 2006. Today there are 15 active business incubators and three business incubators are in the registration process (178 total residents) (MERD, 2012). In addition three innovative incubators and two technological parks were registered by Ministry of science and technological development.

The Strategy for development of competitive and innovative small and medium enterprises 2008 - 2013 was adopted in October 2008. This Strategy defines medium-term priorities and directions of development of SMEs and entrepreneurship in the Republic of Serbia. The aim of the Strategy is to create a framework for developing a sustainable, internationally competitive and export-oriented sector of small and medium enterprises, according to the principles of entrepreneurial economics, based on knowledge and innovation. The basic principles of the Strategy are contained in the five pillars:

- Promote and support entrepreneurship and the establishment of new enterprises
- Human resources for competitive SME sector
- SME Financing and Taxation
- The competitive advantage of SMEs in export markets
- Legal, institutional and business environment for SMEs

The strategy is implemented through a five years operational plan, which is further operationalized by annual action plans.

The country is a member of the European Charter for small enterprises as from June 2003. In parallel with participating in the process of monitoring the SBA in the Western Balkans, Serbia is included in the monitoring process of SBA at the EU level through participation in the SME Performance Review. In Serbia in 2010 the situation is as described below (European Commission, 2011, SBA Fact sheet 2010/2011, Serbia):

- In the area of *"Entrepreneurship",* Serbia has better performance than EU average in: Entrepreneurial intention (% of adults who intend to start a business within 3 years – Serbia 22%, EU average 11.08%) and media attention for entrepreneurship (Serbia 56%. EU average 51.35%). Serbia is placed below EU

average in share of adults who agree that successful entrepreneurs receive a high status (Serbia 56% and EU average 51.35%).

- In the area of *"Second change"* cost for close the business are much higher than the EU average, 2011 (Serbia 23%, EU average 10.78%). On the policy level, these challenges were addressed through a new Bankruptcy Law and 11 by laws that were adopted in 2010.

- In the area of *"Think small first"*, general burden of government regulation in Serbia is much higher than EU average (1 = burdensome, 7 = not burdensome) Serbia 2.3 EU average 3.12.

- In the area of *"Responsive administration"* Serbia lags behind the EU average. Serbia has better performances than EU average only in: time to start a business (in Serbia is 13 days and EU average is 14.26 days), cost in minimum capital (% of income per capita) (Serbia 6%, EU average 18.76%) and cost required to transfer property (% of property value) 2011 (Serbia 2.7, EU average 4.68). Serbia in this area is below EU average in: costs required to start a business (% of income per capita) 2011 (Serbia 7.9; EU average 5.47%); time required to transfer the property, 2011 (calendar days, Serbia 91, EU average 33.96); and number of tax payments per year, 2011: Serbia 66, EU average 16.94.

- In the area of *"State Aid and Public procurement"* there were no available indicators.

- In the area of *"Access to finance"* the only indicators available for Serbia were the strength of legal rights and depth of credit information and there are slightly above EU average.

- In the area of *"Single market"* there were no available indicators for Serbia.

- In the area of *"Skills and innovation",* Serbia is below the EU average in all core indicators: SMEs introducing marketing or organizational innovations (% of SMEs) 2008; (18.05 to 39.9 in EU), SMEs innovating in – house 2008 (% of SMEs – 27.83 to 30.25 in EU), innovative SMEs collaborating with others (% of SMEs in 2008, 3.5 to 11.16 in EU), SMEs participating in EU funded research (number per 100,000 SMEs in 2011 – 3.7 to 20.95 in EU). As part of this area, Ministry of Science and Technological Development has implemented the competition for the best technological innovation in 2010 for implemented innovations, innovative ideas and resources. The project Support to Enterprise Competitiveness and Export Promotion (SECEP), prepared the mapping of the clusters and as a result 6 priority clusters were selected for technical assistance.

- In the area of *"Environment"* and *"Internationalization"* there were a little actions taken by the Government.

- In the area of *"Internationalization"* Serbia is below the EU average in all relevant indicators such as: cost required to import, time required to import, number of documents required to import, cost required to export, time required to export, number of documents required to export.

3.3.2.1 Clusters in Serbia

In order to compete successfully on the global market, small and medium sized enterprises in Serbia have to join their forces in clusters (Dzordzevic, et al., 2010). The Ministry of Economy and Regional Development (MERD) of Republic of Serbia in the period 2006 - 2011 implemented a multi-year program to support cluster development. The program aimed at encouraging economic development, employment growth and increasing of export through networking between research and development institutions and cluster members. Evidence from evaluations and econometric studies of cluster programmes and R&D collaborations between business and research have verified that cluster programmes produce significant impact on many of the key performance

indicators of cluster programmes such as export growth, employment, productivity per employee, total factor production and innovations (Christensen et al, 2011). In the first phase of the program consultation and preparation of the program took place (end of 2005 end of 2006), the second phase was a phase of stabilization and growth of clusters (2007), the third one was focused on strengthening the operational capacity and commercialization of existing cluster (2008) while the fourth stage was sustainability plan for inclusion of clusters in the international business trends, innovative joint projects and development of innovation infrastructure (since 2009).

It is a challenge the exact number of cluster initiatives in Serbia to be determined, because of different definitions and perspectives of cluster supporting institutions. In addition to the fact that some of the cluster related cooperation have not been officially institutionalized, there is also lack of consistency of the mapping exercises, supported by both, governmental institutions and international donor organizations.

Out of 22 clusters initiatives that exist in Serbia in total, six have been established either during the last phase of collection of survey questionnaire or after the questionnaires have been collected. They have been marked separately, based on the year of established in the last column. In addition, the number of cluster members, in each of the clusters was presented, as an indicator of the size of the cluster and importance for national economy. For the purpose of identifying promising cluster within the EU funded project "Support to Enterprise Competitiveness and Export Promotion" (SECEP), implemented from May 2010 - April 2012, additional indicators were used, but they are not taken in consideration in this table, because they are not the focus of this research.

The Table 3.6 provides an overview of the registered cluster initiatives in Serbia, based on combination of information received from the Ministry of Economy and Ledib house of clusters.

Table 3.6 Cluster initiatives in Serbia

	Name of the cluster	Number of members	Year of establishment
1.	Automotive Cluster - AC Serbia*	65	2005
2.	The Agency for Wood – Serbian Wood Processing Cluster*	300	2005
3.	BIPOM Cluster *	75	2005
4.	Plastics and Packaging Cluster – JATO*	26	2005
5.	Flower cluster – Sumadiski svet*	98	2006
6.	Medical Tourism Cluster - Vojvodina	50	2007
7.	ICT Network*	21	2008
8.	Istar 21	35	2008
9.	Cluster for recycling of used batteries - Galenika	4	2008
10.	Netwood – Cluster for Furniture Production	5	2009
11.	Civil Engineering Cluster – DUNDJER Nis	13	2008
12.	Medical start-up cluster	19	2010
13.	Nis Cluster for Advanced Technologies - NICAT	28	2010
14.	Fashion Apparel Cluster Serbia - FACTS	16	2010
15.	Association of food producers - POLUX	23	2010
16.	Vojvodina ICT Cluster - VOICT*	27	2010
17.	Creative industries**	42	2011
18.	Cluster of Serbian aeronautical industry**	41	2011
19.	Fund for micro regional tourism Cluster Subotica-Palić**	24	2011
20.	Construction cluster Sumadija and Pomoravje**	15	2011
21.	Real estate cluster**	17	2012
22.	Tourism cluster Sombor Salas**	24	2012
Total number in 2013		**968**	
Total number in 2011		**805**	
Total number of cluster members of active clusters in 2011		**514**	

Key: * Cluster members participated in the survey, ** Clusters that have been established after the collection of the survey questionnaires

Under the Program for support the development of innovative clusters, the Ministry of Economy and Regional Development distinguish two types of clusters in Serbia:
- clusters which are in initial phase of their development, so called 1st stage clusters
- more advanced clusters, in their development phase, so called 2nd stage clusters

The Program for support the development of innovative clusters in Republic of Serbia for 2012, allocates 12,000,000 RSD (106,823€) for supporting both types of clusters (MERD, 2012). The minimum amount that can be allocated to the new formed innovative clusters (so called 1st stage clusters - clusters in initial phase of their development) is 200,000 RSD (1,800 €), and the maximum 2,000,000 RSD (18,000). Ministry of Economy and Regional Development defines the following clusters as 1st stage clusters (MERD, 2012).

The minimum amount that can be allocated to existing innovative clusters (so called 2nd stage clusters – development phase) on demand is minimum 1,000,000 RSD (9,000€), and maximum 6,000,000RSD (53,000€). The financial support through this Program can be up to 50% from the total project costs. The rest needs to be co-financed with own contribution from the cluster members. The own contribution is not allowed to be provided by any external sources, such as the Budget of Serbia, autonomous province, local government budgets and donor organizations. Project costs and activities that are eligible for funding are:

For the 1st stage newly established innovative clusters - in the initial phase of work:

1. Operating expenses of the cluster office:
    - labour costs of employees in the cluster;
    - costs of renting space and overhead expenses of the office;
2. Activities for strengthening networking of the members:
    - Internal network of the members
    - External linkages
3. Organizing of training programs to meet the technical regulations applicable to the EU market for the relevant area of business clusters;
4. Organizing of seminars and conferences that encourage knowledge sharing, networking and promotion of members of clusters of clusters.

For the 2nd stage, existing innovative clusters - in the development phase the following cost and activities are eligible for funding:

1. Development of common services (joint market research, coordinated procurement, investment aid, market information, partner search, support for connecting the supply chain, international networks, access to finance);
2. Feasibility studies and other project technical documentation for joint infrastructure projects;
3. Development and / or implementation of joint innovative projects related to the development of new or significantly improved products, processes or services;
4. Developing and testing of prototypes and new product design and packaging, testing and introduction of new production processes;
5. Protection of intellectual property, purchase of patent rights and patent documents;
6. Organizing of training programs, specialized training and workshops to meet the technical regulations applicable to the EU market for the relevant area of business clusters;
7. Organizing seminars and conferences that encourage knowledge sharing, networking and promotion of members of clusters of clusters. (MERD, Program for support the development of innovative clusters in Republic of Serbia for 2012).

Another grouping of clusters in Serbia was done by the EU funded project "Support to Enterprise Competitiveness and Export Promotion" (SECEP), which was implemented from May 2010 - April 2012. The project Support to Enterprise, Competitiveness and Export Promotion was designed to aid Serbian companies to improve their competitiveness through cluster development and supply chain development. An important component of the project was to support to existing clusters and facilitation of cluster development in areas where there is good potential for improving industrial competitiveness.

From the outset, based on Qualitative Analysis of Serbian Clusters conducted within the project, as well as from discussions with Serbian ministries and partners, SECEP has divided the Serbian clusters into three groupings:

1. Highly promising clusters, i.e. Auto Cluster Serbia, Embedded Cluster, and Software Cluster Serbia.
2. Promising clusters, i.e. Agency for Wood and Royal Vacation.
3. Indeterminate clusters, i.e. BIPOM, Phoenix, ASSTEX and Film.

The classification of the three manufacturing clusters as indeterminate (BIPOM, Phoenix, ASSTEX) reflects the difficulties in making basic manufacturing viable in post-Yugoslavian Serbia without major government investment and/or a major FDI partner and the emergence of large dominant companies and countries with low cost manufacturing capacity such as China and South Korea. (SECEP, p. 13)

Based on the "Qualitative Analysis of Serbian Clusters" prepared by SECEP, two clusters were selected as most prosperous (auto parts and software and embedded) based on the following 3 indicators:

1. Competitiveness - based on Michael E. Porter's seminal work on clusters.
2. Management and implementation capacity - based on the EFQM framework.
3. Significance.

In the pre - selection process the precondition was that all three indicators mentioned above must be reasonably positively evaluated. Following that logic, even in a case if a cluster was large, i.e. highly significant and has first class management and implementation capacity, any efforts to develop the cluster may be in vain, if fundamental economics of the cluster are uncompetitive. The three indicators can compensate for each other to some extent, but not completely so. According to this analysis, the following clusters were identified as the most prosperous clusters in Serbia in the beginning of the project (See Table 3.7):

Table 3.7 Most prosperous clusters in Serbia in 2010

Cluster	Rationale for Selection
Auto parts	• Good potential for competitiveness both in auto parts for Auto OEMs and for standardized international parts due to relatively low cost position relative to surrounding countries. • Substantial investment by FIAT and the Serbian Government. The sector has generally received a substantial amount of FDI. • Good cluster management and implementation skills. • Sector could be vehicle to rebuild Serbian competitiveness in some manufacturing sectors by building experience and skills and introducing wide spread European standardization norms in Serbian industry. • Large revenue and employment potential.
Software and Embedded	• Software is already competitive. • Good human resource foundation in engineering education and the engineering faculties in Belgrade and Novi Sad. • First class management and implementation skills. • One of the competitive vehicles through which Serbia and MERD can contribute to building sectors which support knowledge based society consistent with the Lisbon and Barcelona agendas. • Somewhat limited employment and revenue skills, as businesses require highly specialized human resources.

Source: SECEP (2009)**,** *Qualitative Analysis of Serbian Clusters,* p.16

The cluster members that have been surveyed in this research participate in the following clusters:

Automotive Cluster of Serbia – AC Cluster was founded and registered in November 2005, as a foundation comprising of 12 enterprises (five SMEs) and three support organizations. The cluster includes Serbian companies and institutions that are producing automotive parts and components, respectively providing services in the automotive sector. The objective is strengthening the competitiveness of its members,

achieving a profitable positioning within the supplier value chain of international car producers and effecting indirectly the enhancement of the economic situation within the whole automotive supplier sector. Main activity fields of the network corresponding with the objectives are qualification, information and communication, marketing and cooperation Today AC Serbia has 65 members (50 companies and 15 scientific institutions) (AC Serbia, 2011)

Vojvodina ICT Cluster – VICT was founded in May 2010. The cluster has 27 members with total workforce of 1.500 experienced IT professionals. The Vojvodina ICT Cluster is a recognized partner in the development and application of new ICT products and services with high profit potential and an important partner in the development of individuals, companies and regional businesses. Strategic goals of VICT for 2011 – 2013 are:

- Strengthening the associations
- Positioning of the association in social and business environment
- Generating new business opportunities
- Building stronger links between R&D and the market (Vojvodina ICT Cluster,2010)

ICT Network - is a new alliance, with the new strategy and organizational structure, that emerged by joining two existing business associations in Serbia – Serbian Software Cluster and Embedded cluster. The idea behind this new Cluster is to create and develop the brand of Serbian ICT industry in the global market, by inclusively forming a network of companies, entrepreneurs, universities and organizations in the field. This cluster has 20 members and 3 support institutions with 2000 employees. The main cluster activities are focused on exchange of the information regarding ICT technologies and collaboration of the members on innovation and commercial projects (MERD, 2012).

Fashion Apparel Cluster Serbia – FACTS – The cluster was registered in September 2010 and has twelve members – ten private sector Apparel Producers and three Academic Institutions. The main goal of the cluster is to support the strengthening of global

economic competitiveness of businesses related to textiles and textile industry. Objectives of the FACTS cluster are:

- Increase and Enhance the Visibility of the Organization amongst public and private sector participants, with the ultimate aim and intent to raise awareness and profile of the cluster members, as well as Serbian Textiles sector as a whole
- Increase efficiency and vibrancy of the cluster members and their workforce, via a series of targeted programmatic interventions
- Engage and Implement a series of Initiatives to address the medium to long-term financial sustainability of the FACTS Cluster
- Expending number of services for the members through joint activities meant to achieve savings for the members and to help development of innovation projects
- Becoming the leader in lobbying and assistance for the textile industry in Serbia, with the aim of improving business climate in the industry (FACTS, 2010)

Serbian Wood Processing Cluster was established in 2005 with assistance of the Regional Development Agency of Sumadija and Pomoravje and Faculty of Economics in Kragujevac and financially supported by the European Agency for Reconstruction (EAR) and Serbian MERD. The cluster consists of 300 members, concentrated around a core of export oriented wood processing and furniture producing companies.

Flowers Cluster "Sumadiski Cvet" is an association of flower producers and other related industries within the following product range: pot flowers, garden plants, cactuses and spice herbs. It was established in December 2006 with an objective to support flower industry in Sumadija and Pomoravje regions. It supports distribution of products, procurement of raw materials and education of cluster members. Cluster main partners are: Regional Development Agency of Sumadija and Pomoravje, City of Kragujevac, Municipality of Svilajnac and Municipality of Raca. The Cluster consists of 98 cluster members - 70 registered agricultural holdings, 10 enterprises, 13 sole proprietors and 5 municipalities. Main field of operation are:

- Joint distribution of products produced by cluster members

- Improving capacities of cluster members through education on new flower growing technologies and flower species
- Internationalization and establishing contacts with international partners

The cluster members have jointly implemented process of branding through improvement of visibility and promotion activities at the national level, conducting a research of markets of EU and neighbouring countries and developing international market penetration strategy. Future plans include increasing the membership base to 200, increasing the market share for 30% at national level, increasing the level of the brand recognition, standardization of process from procurement to distribution, establishment of a joint venture for product distribution, increasing investments through networking with financial institutions, intensification of RD activities through partnerships with R&D organizations, raising the effectiveness and efficiency of service center and continuing with professional development of cluster members.

BIPOM cluster was established in May 2005 with a main mission of linking leading local companies, organizations and institutions in regional and global networks and support of family farms around the local mini-processing plant and cooperation in the production and servicing of agricultural machinery and equipment. It has been founded with support of Serbian Chamber of Commerce and its activities have been financially supported by the Ministry for Economy and Regional Development Agencies. BIPOM consist of 75 members, 43 individual experts in the fields of industry, agriculture and technology and 32 manufacturers of farm machinery and 10 partners, institutions of knowledge and science, government and NGOs and associations. BIPOM Cluster offers complete solutions for the development of family farms, mini plant and services: projects, agricultural machinery, equipment, seeds and planting materials, training and support of agronomists, engineers, craftsmen, technicians and farmers local partners. Its vision is to become a competitive network of companies which give service to the local farmers in the Balkans, Africa, the Russian Federation and the CIS states. Areas of cooperation with partners in target regions include:

- A systematic and comprehensive support for sustainable development of the village - the concept 3F ("From Farm to Fork")

- The transfer and exchange of technology and know-how for development of family farms and mini-plant for processing agricultural raw materials
- Cooperation in the production of agricultural machinery, equipment and seeds
- Joint development of new machinery, hybrid seeds and seedlings to the needs and possibilities of local farmers
- Joint participation in local, regional and global markets
- Creating conditions for young professionals to remain in their countries and work on projects throughout the territory of branch network in joint innovation and development teams with experienced professionals. (BIPOM, 2005)

Plastics and Packaging Cluster - Cluster JATO, Serbia - The first plastics and packaging cluster JATO is an association of producers of plastic and packaging products, with main objective of increasing the competitiveness of its members through strengthening their cooperation. The cluster consists of 26 mainly Vojvodina based cluster members, 21 companies and 5 R&D organizations, which employ more than 1000 people. For improving the quality of production process of its members, the JATO cluster has established partnership with German company Arborg, one of the biggest suppliers of equipment for production of plastic.

Cluster analysis (benchmarking) in Serbia, according to the methodology of the European Observatory, indicating that the Serbian clusters showed weakness in all relevant dimensions (size, specialization and focus) in the European context. It suggests a number of obstacles in the development of clusters, especially mistrust and unwillingness for cooperation among enterprises, lack of cooperation with research and development institutions, lack of skilled management of clusters, undeveloped common cluster infrastructure (e.g. design centres, laboratories, training centres, etc.) and financial self-sustainability of the cluster. The limiting factors in cluster development are also barriers for entrepreneurship development and the lack of FDI. (MERD, Strategy and policy for industry development in Serbia 2011 – 2020, 2011, p.119). According to the Strategy (MERD, 2011) the establishment of appropriate research centres, export promotion agencies, institutions for assessing the quality and the like, as well as strengthening business associations, promotion of new brands or locations can significantly contribute to the development of the competitiveness of enterprises in clusters (JATO, 2005).

3.4.1 Socio-economic characteristic of Bulgaria

The Bulgarian transition from a socialist economy to a free-market economy was through following a middle way between the shock therapy approach, such as in Poland for example, and the gradualist approach, such as in China (Naydenov, 2011) Based on the level of inflation rates and GDP in the transition period, according to Naydenov (2011) this middle road – the partial-reform equilibrium – is likely to lead to an even less successful transition than that of a country that took the gradualist approach or a successful shock therapy approach.

In order to get an overview about the current economic situation in the country, in this section most recent economic development indicators from the European Economic Forecast (European Commission, 2013) will be presented.

GDP growth has decreased from 1.8% in 2011 to 0.8% in 2012, due to the euro-area financial turbulence and weaker export markets. While the contribution from net exports became negative in 2012, domestic demand supported growth. A recovery in private consumption was the main driver of growth, along with a substantial positive contribution from inventories. After three years of strong contraction, investment activity has also stabilised and according to the Vienna Institute for International Studies (2013) the level of FDI inflow in 2012 is 1,480 MEUR. In 2013, total investment is projected to be mainly driven by EU co-financed public sector projects. Private sector investment is set to also pick up gradually, in line with the economic recovery and easing financing conditions. For the year as a whole, GDP growth is forecast to reach 0.9% in 2013 and to accelerate to 1.7% in 2014 (EU Commission, 2013). Domestic demand is expected to continue to drive the economic recovery, supported by the relatively strong financial sector and the small fiscal stimulus in 2013. The first half of 2013 indicated strong growth in exports to non-EU countries, especially on account of energy and base metal products. The current-account deficit is therefore forecasted to widen further to some 3½% of GDP by 2014.

While GDP has recovered, the labour market has remained remarkably weak. In 2012, employment fell by 4½%, continuing its rapid decline. Given the relatively weak

economic recovery in 2013, employment is projected to fall by a further 2%, but stabilise in 2014 (EU Commission, 2013). Unemployment has increased less than the sharp decline in employment would suggest. This is explained by a contraction in the working-age population due to unfavourable demographic trends and emigration. In 2012, the unemployment rate increased to 12.3%, 1 pp. higher than in the member states. Unemployment is expected to peak at 12.5% in 2013 and to edge down slightly in 2014.

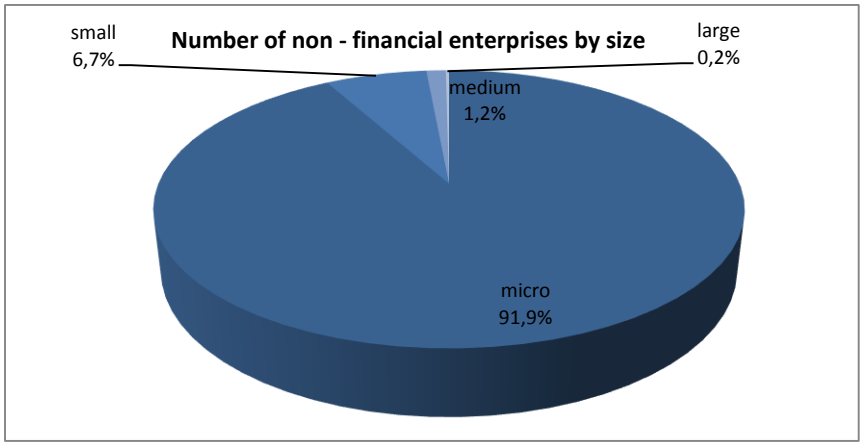
3.2.3 SMEs and cluster policy in Bulgaria

In the Article 3 of the Law for SMEs of Bulgaria, they are precisely defined:

- *Medium - sized enterprises* comprises enterprises that have: number of personnel fewer than 250 people; annual turnover that not exceeding 97,500,000 BGN (49,000 €) or an annual balance sheet not exceeding 84,000,000 BGN (43.000 €).
- *Small enterprises* are ones that have: number of personnel fewer than 50 people; annual turnover that not exceeding 19,500,000 BGN (10,000,000 €) or an annual balance sheet not exceeding 19,500,000 BGN (10,000,000 €).
- *Micro enterprises* are ones that have: number of personnel fewer than 10 people; annual turnover that not exceeding 3,900,000 BGN (2,000,000 €) or an annual balance sheet not exceeding 3,900,000 BGN (2,000,000 €).

In 2010 out of 366,929 companies, 337,147 were micro, 24,368 were small, 4,622 were medium and 752 were large companies. (See Figure 3.7) (NSI, 2010)

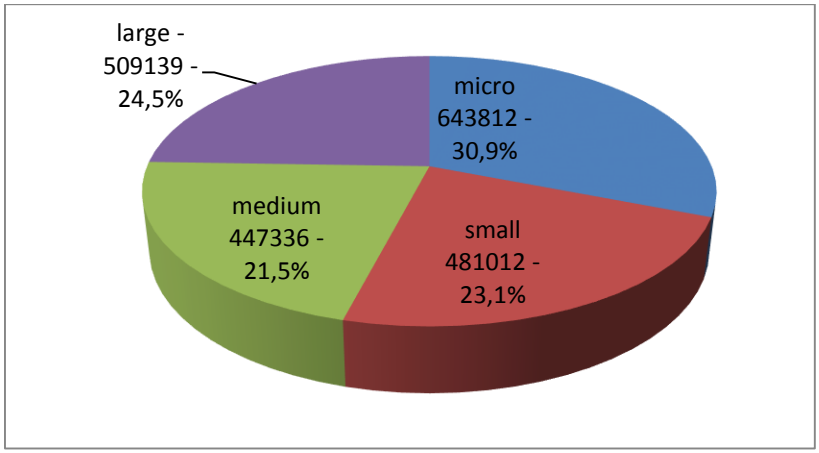
Figure 3.7 Number of non – financial enterprises by size in Bulgaria



Source: Bulgarian National Statistical Institute, 2010

The SME sector in Bulgaria is important in terms of employment and contribution on VA (value added). SME sector in Bulgaria is the biggest employer. Out of 2,081,299 employed in non-financial enterprises, 1,572,160 are in SME sector. (See Figure 3.8)

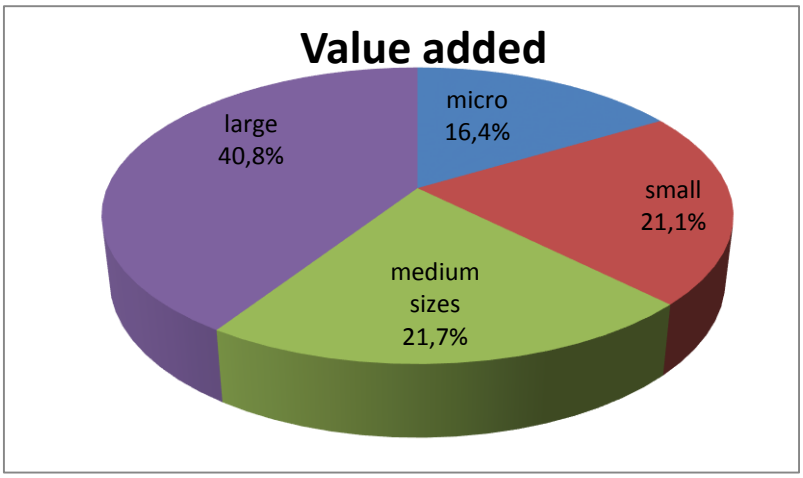
Figure 3.8 Number of employed in non – financial enterprises by size



Source: Bulgarian National Statistical Institute, 2010

The contribution of SMEs to the value added is 59.2%. (See Figure 3.9)

Figure 3.9 Structure of GVA in 2009 by enterprises size in Bulgaria



Source: SBA Fact sheet 2010/2011 Bulgaria, p.1

Institutions for supporting SMEs in Bulgaria are (MEET, National Strategy for support SMEs 2007 – 2013, 2007):

- Ministry of Economy, Energy and Tourism
- Bulgarian small and medium – sized enterprises promotion agency (BSMEPA) - is a government body under the Minister of Economy. It was established in 2004 as a successor of the Bulgarian Trade Promotion Agency (BTPA) and the Agency for Small and Medium-sized Enterprises (ASME). BSMEPA has four specialized operational Departments:
  - Information Services and Regional Coordination General Department
  - Technological Development and Innovations Department
  - Pre-accession Projects and Program Implementation Department
  - Competitiveness and Entrepreneurial Skills Department.
- Advisory Council for SME support – The Council members are: Deputy Ministers of Finance, Labour and Social Policy, Education and Science, Secretary of the Coordination Council in the management of EU funds, Executive Director of the Executive Agency for Promotion of SMEs, Executive Director of the Bulgarian Development Bank, President of Bulgarian Industrial Association, Chairman of the Bulgarian Chamber of Commerce, CEO of National Association of Municipalities in Bulgaria, Executive Director of the Institute for Market Economics, President of the Centre for Economic Development, Manager of the Foundation for Enterprise Development.

For supporting SME development, the Government of Bulgaria has prepared the following documents: Law for Small and Medium-sized Enterprises of Bulgaria, National Strategy for support SME 2007 - 2013, Operational Programme "Development of the Competitiveness of the Bulgarian Economy 2007 – 2013. The National Strategy for support SMEs 2007 – 2013, defines seven priorities for support of SMEs:

1. Education in entrepreneurship and promoting entrepreneurship and skills
2. Improving the business environment
3. Facilitating access to finance
4. Competitiveness and Innovation
5. Development of cluster structures
6. Improving access to single and external market
7. Intellectual Property Protection (MEET, 2007a)

Three fundamental areas for action defined in this Strategy are: education and entrepreneurship promotion; facilitating access to funding and improving the business environment. These three areas serve as a base for developing of competitive enterprises. The second level priority is “Competitiveness and Innovation” through each the development of enterprises is supported - technological innovation, energy efficiency, the introduction of quality management systems and etc. On the third level, priority actions of the Strategy are: development of cluster structures; improving access to single market and external market and Intellectual Property Protection. Through measures defined under these priorities it is foreseen to support those enterprises which already managed to rich certain stage of development that allows them to consider expanding on foreign markets, which is inextricably associated with protection of their intellectual ownership in these markets (without excluded internal market) and to their desire to increase their competitiveness through forming cluster structures, for improving their competitiveness. For the priority: “Development of cluster structures” the objective is defined as:

Joint efforts of small businesses in creating new production decisions need to be supported because they strengthen the ties between enterprises and improve their market flexibility. This objective is foreseen to be achieved through 3 measures:

1. Establishing SME Promotion Agency, which operate as a national Coordinator of the clusters in Bulgaria;
2. Using clusters as the basis for the development of innovative potential of SMEs and to promote entrepreneurship;
3. Establish a coordination group "Future development of clusters Bulgaria "at the national level, participation of business associations, employers' associations and other\ NGOs. (MEET, 2007a)

Every year based on information given by Bulgaria, the European Commission is preparing report for the progress made in Small Business Act (SBA). Annually updated factsheets contribute to better understanding of the trend in the SME policy on national level. In Bulgaria in 2010 the situation was the following:

- In the area of *"Entrepreneurship",* Bulgaria is lagging behind the EU average. Bulgaria has better performance than EU average only for the indicator: Preference for self-employment (% of respondents who would prefer to be self-employed - 2009, Bulgaria 50.3%, EU average 45.1%). For entrepreneurial rate; opportunity driven entrepreneurship; feasibility of becoming self-employed and share of adults who agree that school education helped them develop an entrepreneurial attitude, Bulgaria is below EU average.

- In the area of *"Second change"* Bulgaria is also behind the EU average mostly because of the time to close a business (in Bulgaria it takes 3.3 year and EU average is 1.98 years). For the costs to close business (cost to recover debt as % of the debtor's estate) Bulgaria is slightly better than EU average (Bulgaria 9%, EU average 10.78%)

- In the area of *"Think small first"*, there is insufficient information available for Bulgaria, but for the business assessment of the general burden of government regulation, Bulgaria is almost in line with EU average. In this field Bulgaria in 2010 has develop Action Plan for reduction of the administrative burdens by 20% by the end of 2012.

- In the area of *"Responsive administration"* Bulgaria performances are better than EU average in: cost for starting a business (% of income per capita) (Bulgaria 2.5%, EU average 5.47%), time required to transfer property (calendar days), 2011 (Bulgaria 15, EU average 33.96 days); cost required to transfer property (% of property value), 2011 (Bulgaria 3%, EU average 4.68%).

- Bulgaria is below EU average regarding the costs for: time to start a business (calendar days), 2011, (Bulgaria 18, EU average 14.26); time required to comply with major taxes (hours per year), 2011 (Bulgaria 616; EU average 218.04), costs to enforce the contract (% of claim), 2011, (Bulgaria 23.8%, EU average 20.84%)

- In the area of *"State Aid and Public procurement"* Bulgaria is below EU average in: State Aid of SMEs (% of total aid), 2009, Bulgaria 0.4%, EU average 6.9% and e –

Procurement availability (pre – award), 2010, Bulgaria 52, EU average 72.94. In 2010 and early 2011, 2 grant (aid) schemes were launched: Technology Modernization of SMEs and Introduction of International Standards".

- In the area of *"Access to finance"* Bulgaria is close to EU average. Among the indicators in this area, Bulgaria has better performance than EU average in: share of bank loan applications by SMEs that were not successful, 2009, (Bulgaria 14%, EU average 23%); willingness of banks to provide a loan (% share that indicated a deterioration), 2009 (Bulgaria 18%, EU average – 30%); strength of legal rights, 2001 (Bulgaria 8, EU average 6.81); depth of credit information index, 2011, (Bulgaria 6, EU average 4.47.).

- Bulgaria is below EU average in: EU Structural Funds dedicated to stimulating entrepreneurship and SMEs in 2007 – 2013 (% of total allocation by MS), 2011, Bulgaria 4.8%, EU average 22%), Venture capital investments 0 early stage (% of GDP), 2009, (Bulgaria 0.0012%, EU average. 0.0014%). In 2010 several expressions of interests were launched under the Joint European Resources for Micro to Medium Enterprises (JEREMIE) Initiative in Bulgaria.

- In the area of "*Single market"*, under EU Structural Fund Operational Programmes "Development of the Competitiveness of the Bulgarian Economy 2007 – 2013 a grant scheme "Introduction of International Recognized Standards" was launched. The objective of this grant scheme is to support enterprises for introducing management systems that are in line with EU standards.

- In the area of *"Skills and innovation",* Bulgaria is below EU average in nine out of ten indicators which are defined for this area. Bulgaria is below EU average in: SMEs introducing product or process innovations; SMEs introducing marketing or organizational innovations; Innovative SMEs collaborating with others; SMEs selling online; SMEs purchasing online; Training enterprises; SMEs participating in EU funded research;

In 2010 in Bulgaria, however, certain positive developments took place in this SBA area. Under EU Structural Fund Operational Programmes "Development of the Competitiveness of the Bulgarian Economy 2007 – 2013 three grants schemes were launched for the following activities:

- Support for the Transfer of Knowledge to Enterprises – with an objective to stimulate market – oriented researches and development activities
- Development of Start – up Innovative Enterprises through Support for Introduction of Innovative Products Processes and Services – the objective is to support innovative start up enterprises in preparation and implementation of innovative projects in the production processes and marketing.
- Support for clusters development - the objective is to support developing the cluster administrative and management capacity, developing new products and services, entering into new markets, promoting investments in modern technology.

In the area of *"Environment",* for Bulgaria only one indicator is available: Innovations with environmental benefits. According to this indicator Bulgaria is below EU average (Bulgaria 0.01% EU average 0.04%).

In this area in 2011, a Memorandum for understanding between MEET and the EBRD was signed for financing the projects of SMEs in the area of energy efficiency and green economy. Based on this through this bank 150 million EUR were allocated for support SMEs in the area of energy efficiency and green economy.

In the area of *"Internationalization"* Bulgaria is placed below EU average in all indicators. Trading in Bulgaria is more costly and time consuming then in the rest of EU.

3.4.3.1 Clusters in Bulgaria

According the Operational Program "Development of the competitiveness of the Bulgarian economy 2007 – 2013 all clustering initiatives in the country can be classified as clusters in their embryonic stage. Proposed measures for the period 2007 – 2013 are

focused on:

- establishing of new and strengthening the existing clusters to help firms to specialize and to innovate;
- cooperation among cluster members and between the clusters and other stakeholders (national/regional/local authorities, universities, intermediaries, etc.) to strengthen the governance of the clusters;
- "maintenance" of the human capital (MEET, 2007)

The development of cluster policies and projects has been continuously supported in Bulgaria through international donors throughout the 2000s (especially in the area of ICT). The first project which was financed by PHARE Program „Introduction of cluster approach and establishment of cluster model" ended successfully by the end of 2006 with 2 results:

- Development of National Cluster Development Strategy and Action plan for its implementation and
- Support formation of two clusters (MEET, 2007a)

With support from the next phase of the project – Cluster II (2007 – 2009), additional ten clusters have been supported.

The cluster policy has become more prominent in Bulgaria in the past few years, giving rise to the creation of an Association of Clusters. Bulgarian Association of Business Clusters (ABC), which was established by 8 clusters in 2009 by:

1. Bulgarian textile cluster - Sofia
2. Cluster "Mechatronics" - Sofia
3. Cluster Elemon - Varna
4. ICT Cluster - Varna
5. Bulgarian ICT Cluster - Sofia
6. Cluster "Optela - LT" - Plovdiv
7. Cluster "Information Resources" - Sofia
8. Maritime Cluster – Varna

Since there is no a single document where all of the clusters initiatives have been listed, the Table 3.8, present the Bulgarian clusters based on information obtained from ABC, MEET (2007) - the Operational Program – Development of the competitiveness 2007 –

2013 and project documentation of EU Phare Cluster Grant Scheme and Technical Assistance (Cluster II project) implemented January 2008 - February 2009.

3.8 Cluster initiatives in Bulgaria

	Name of the cluster	Number of members	Year of establishment
1.	Marine cluster Bulgaria	18	2005
2.	Srednogorie Honey Industrial Cluster	19	2005
3.	Foundation ICT Cluster*	20	2005
4.	Tourism Cluster Smoljan*	20	2005
5.	Cluster "Optela - LT" - Plovdiv	7	2005
6.	Cluster Elemon - Varna	7	2005
7.	Cluster "Information Resources" - Sofia	12	2005
8.	Media and Print Cluster*	24	2005
9.	Cluster Institute of Apparel and Textile - Danube	8	2005
10.	Cluster Mechatronics and Automation*	22	2006
11.	VMP Design*	11	2007
12.	Varna Tourism Cluster*	36	2007
13.	Bulgarian Cluster „Telecommunications”	11	2008
14.	Cluster Microelectronics and Embedded system *	12	2008
15.	EVIC – Electric vehicles industrial cluster	43	2009
16.	Bulgarian Furniture Cluster *	18	2009
17.	Cluster Aeronautical Technologies, Research and Applications	20	2010
18.	Black See Energy Cluster**	10	2011
19.	Inter Moda Trading Cluster**	9	2011
20.	Metal casting cluster**	11	2011
21.	Cluster for Accessible Tourism – CAT**	16	2011
22.	Automotive Cluster Bulgaria **	27	2012
23.	ICT Cluster Plovdiv **	15	2012
24.	Green synergy cluster**	12	2012
25.	Varna Welcome Cluster**	16	2012
26.	Cluster for Health Tourism – Bulgaria **	14	2013
Total number in 2013		**388**	
Total number in 2011		**308**	
Total number of cluster members of active clusters in 2011		**146**	

Keys: * Cluster members participated in the survey, ** Clusters that have been established after the collection of the survey questionnaires

The Table 3.8 provides an overview of all of the cluster initiatives that operate in Bulgaria in 2013. In the first column the number of cluster members is presented, while the next one provides information about the number of employees, as indicators of the size of the cluster and importance for national economy. Based on the year of cluster establishment, which is presented in the last column, the new clusters established after 2011 were separated from the ones which were in place during the implementation of the research. Out of 27 clusters in total in Bulgaria, nine have been established either during the last phase of collection of survey questionnaire or after the questionnaires have been collected. In addition, seven cluster initiatives, which were participating in the survey, have been highlighted.

The most prominent examples of clusters in Bulgaria are in the ICT sector, since it is among the most dynamic sectors of the Bulgarian economy (Mancheva and Stefanov, 2011). The cluster members that participated in this research are presented below.

Foundation "Bulgarian Cluster for Information and Communication Technologies" was created in 2005 as a platform for fruitful dialog and collaboration between ICT business and state administration. At the beginning, main activities of the foundation were focused to support government in elaboration of the basic ICT policies. In 2008 the organization changed its main priorities and focused all activities to help ICT SME to increase their competitiveness and to develop internationally. ICT Cluster is a member of several European cluster platforms and networks and maintains very good relationship with many European and world clusters.

The main activities are aimed at reaching the following goals:

- Creation a favorable eco-system for further development of world class clusters in Bulgaria, particularly in ICT sector;
- Development of entrepreneurship, foundation of business skills, and supporting establishment of national system for technology risk financing;
- Supporting ICT SME to increase their competitiveness, educate and train their management meets the challenges of global economy;

- Supporting innovation processes, boosting technology R&D in Bulgaria;
- Stimulate and support dialog between state administration, enterprises and universities and research centers based on a triple helix approach;

This cluster has supported the creation of two additional clusters:

Bulgarian Cluster "Telecommunications" founded in 2008 - The cluster was founded with the purpose of improving the competitiveness of companies. The efforts are directed at the implementation of the best practices in management processes, the improvement of the marketing strategies of companies, the achievement of higher degree of internationalization and the penetration of new markets (BCT, 2008) The portfolio of the member companies covers almost the entire product range of telecommunication services. The member companies construct, produce, install and maintain competitive products. One part of them is made up of software products which find application in the field of modern telecommunication services: IP telecommunications, intranet systems, and specialized software. Other main fields the companies work in include development of telecommunication and network equipment, micro - and nano electronics, embedded systems, power supply devices and converters, security systems, access control and fire alarm systems, multiplexers, optical communications, etc.

Cluster "Microelectronics and Embedded Systems" (CMES) which was founded in 2008. Eight companies from Microelectronic and Embedded System sector and four Universities have joined together in CMES. The cluster represents a work force of more than 5,000 people. CMES vision is to work for the development of the Microelectronics and Industrial Digital Systems sector covering all necessary fields – education, research, project cooperation, project management, and commercial activities. (ICT Cluster, 2008). In addition, the ICT Cluster supported the establishment of "ICT Cluster – Varna" and is a co-founder of the Association of Business Clusters in Bulgaria.

Mechatronics and Automation Cluster has been established in December 2006. Its members are high-tech companies and scientific bodies in the field of instrument-building, hardware and software. In addition to the wide range of know-how the cluster members create state-of-the art high-tech products, which are exported to highly developed European countries, such as Germany, France, Spain, Sweden, Great Britain,

the United States, China, Singapore, Taiwan, South Korea, India, Brazil and Mexico. In addition to the 13 companies, the cluster has five scientific institutions - Institute of Mechanics at the Bulgarian Academy of Science, Institute of System Engineering and Robotics, Institute of Information and Communication Technologies, Faculty of engineering represented by its Department of Instrument - building at the Technical University of Sofia, Technical University of Sofia and five non-government organizations - GIS - Transfer Center Foundation, Bulgarian Society of Robotics, Bulgarian Industrial Association, Automatics and Informatics Union and Applied Research and Communications Fund. Main projects that have been jointly implemented by the cluster members are: Integrated complex for high-temperature cutting and "Plasma welding", a system developed for automated plasma welding of tools and spare parts. Both were implemented with the financial support of the European Union (PHARE Programme).
The clusters' future activities are related to identification of new export oriented possibilities for high-tech products and services with high added value. For that purpose the members plan to participate in the EU programs for Bulgaria, the National Innovation Fund, the 7th Frame Program, etc. and to support the establishment of a high-tech park "Mechatronics and Automation". One of the main objectives of the Mechatronic cluster is to guarantee good technological environment for education and qualification of young experts for their active realization in Bulgaria (Mechatronic and Automation Cluster, 2006).

Bulgarian Media and Printing Cluster was established in December, 2005 in Plovdiv, as an initiative within the Printing Industry Union of Bulgaria (PIUB). The main objective of setting up a cluster is creating synergy effects and improving the performance of the media and printing industry. The first joint initiative was implementation of the project "BMPC Software" at the end of 2006. The cluster management operates through several thematic working groups, which have implemented activities, under the following priority areas:

- Establishing effective communication channels between the cluster members and partners
- Support of innovativeness of the cluster members
- Identifying new markets through fair participation and B2B meetings

- Technology transfer and provision of information
- Internationalization of cluster members
- Capacity building and human resource development
- Advocacy
- Economy of scale activities - joint purchase of raw materials (Bulgarian Media and Printing Cluster, 2005)

Rodopska Furniture Cluster was established in 2006 in the region of Rodopi mountain basin. It consists of small and medium enterprises, specialized in production of high quality massive furniture for home and professional use. With their pine furniture they are well established on Bulgarian market, but there is a strong need for internationalization of their business operations, which was a main reason to initiate cluster cooperation. Main goal of Rodopska Furniture cluster is establishing a brand that epitomizes the Rodopi life-style and representing the interest of the furniture producers in the Pazardzik and increasing the competitiveness of the cluster members through:

- Expanding into new markets in Bulgaria and EU countries
- Providing information and elaborating sector related analysis and market trends
- Improving the labor market in the field of wood processing and design of furniture, through strengthening the links with educational system
- Organizing promotional activities through participation at International fairs, B2B events, conferences and other furniture related business events
- Exchange of experience and transfer of knowledge regarding new technological development in the furniture industry

Tourism Cluster in Smolyan District brings together private companies from the tourism sector, NGOs, cultural and educational institutions and local and regional authorities in the region of Middle-Rhodopes. It was registered as a structural division of Rhodopes Regional Tourism Association in 2005, with a main goal of identifying new possibilities for raising the competitiveness of the involved companies, through concentrating on the following priority fields:

- Elaboration of new Marketing Strategies for the supply of tourist services to the Bulgarian and European market.

- Improvement of the quality of high-school and university education and the employees' qualification in tourism sector.
- Support to the enrichment of tourist product with the trade mark "Rhodopes" for the business.

Main joint activities that have been implemented since its foundation are the following:

- Mapping of the tourism stakeholders in the region and identifying their links with suppliers, clients, NGOs, educational institutions and other companies from different spheres;
- Studding the best practices of functioning cluster models in Sweden;
- Promotion of the tourist products of the region on the tourist exhibitions abroad: Utreht-Holand, Berlin-Germany, Moscow-Russia;
- Organizing info tour for journalists from the printed and the electronic national media for presenting the new tourist products in the municipalities of Smolyan and Chepelare.
- Coordination of the actions for restricting the construction works of the micro water electrical plants in the region of Trigrad-Yagodina
- Regular participation at Tourism Fairs in Varna, Burgas and Sofia

VMP Design Cluster has been founded in December 2007 and it consists of seven companies in the apparel sector. The cluster members decided to institutionalize their cooperation, not just in order to be eligible to apply for the EU Cluster project (Phase II) at the end of 2007, but they also see it as an instrument for improving their competitiveness. The competition from Greek companies, which have been traditionally involved in the textile and apparel production, created additional pressure for the companies from the region to start to work together. The cluster is based in the Southwestern region of Bulgaria, with its members being located in the cities of Petric, Sandanski, Belica, Blagoevgrad, Kresna and village of Javornica. According to the National Statistical Institute it is a region with continuous increasing of the GDP per capita and in the same time the Blagoevgrad region is cross border region, with another EU member, Greece, a fact that influences trade, foreign investments and transport.

The production facilities are in a close geographical proximity, which creates additional cluster benefits, such as lower transport costs, better communication and better access to

local skilled human resources. High concentration of producers of final textile products, in the Southwestern region also attracts numerous suppliers of raw materials, and producers of specialized equipment which is needed for the textile production, especially in the region of Sandanski, Blagoevgrad and Petric.

The cluster members have specialized in different product areas, and together are able to offer higher range of products and to produce larger quantities, which enables them better to respond to the demands of their foreign partners. They have built partnership relations with both educational institutions, offering the students opportunity for internship in their companies. The benefits that cluster members receive as a result of establishing VMP cluster are the following:

- stronger representation of interests of the cluster members against local, regional and national authorities
- increasing the competitiveness of both, its members and the whole textile and apparel sector in the region, especially with regard of their technological capacities and management skills, product development, research and development
- improving the efficiency and good management practices of cluster members
- improving the access of the members to new knowledge, technologies and markets, modernizing the equipment

Main joint cluster activities of the VMP Design cluster include:

- Joint participation at BGate – Balkan exhibition for textile and apparel in Sofia - BGate is Bulgaria's largest sourcing exhibition dedicated to companies and professionals in the textile and clothing industries and is aimed at companies seeking to expand their global competitiveness and it provides a forum that facilitates partnerships among industry professionals in neighboring countries.
- Organizing joint training for production management, and specific operations in textile production under the project BOTYOB – 2006
- Organizing joint training fashion designers and constructors under the project BOTYOB – 2007
- Joint supply of textile products to domestic and foreign partners - In order to be able to respond to their clients' demand and to overcome their size limitations the

cluster members closely cooperate on regular basis for supplying their partners and for increasing the quality of their production

- Setting up and equipping joint design studio - The design studio which was financed under the EU Cluster project (Phase II) contributed towards improving the production quality of all cluster
- Setting up a joint service center for machines and equipment of the cluster members
- Training of personnel of the cluster members, aiming at increasing the productivity and efficiency of the employees, as well as maximizing the benefits of using new equipment and processes
- Market analysis of the textile and apparel sector

Within Operational Program – Development of the competitiveness of the Bulgarian economy 2007 – 2013**,** on 23.03.2012 contracts for financial grants of nine clusters were concluded in total amount of 2,000,854 BGN (1,023,110 €). The supported clusters within this Program are: (MEET, 2007, Operational Program – Development of the competitiveness of the Bulgarian economy 2007 – 2013):

1. Maritime Cluster Bulgaria – financial grant of 335,976 BGN
2. Association "Specialized cluster Institute of Apparel and Textile - Danube " – financial grant of 271,880 BGN
3. Non-profit Industrial Cluster "Electric" – financial grant of 205,688 BGN
4. Non-profit organization "Cluster for accessible tourism" - financial grant of 270,178 BGN
5. Association "Cluster for Metal casting – financial grant of 135,909 BGN
6. Varna Welcome Cluster – financial grant of 78,479 BGN
7. Inter Fashion Trading, Ltd. – financial grant of 320,205 BGN
8. Cluster "Green Synergy" – financial grant of 212,255 BGN
9. Black sea Energy Cluster – financial grant of 170,284 BGN

3.5 Summary

Cluster policy is an integral part of the economic policy. When transferring the experience and applying cluster concepts that have proven to be successful in developed countries both, similarities in their transition process and differences in the size, scope and level of economic development should be taken into consideration.

Productive structures in transition countries are largely made up of SMEs and due to their limited size and resources they face difficulties in gaining access to the international markets (Czinkota, 1996). A possible solution might be for SMEs to cluster together and, by sharing the costs of internationalization, jointly enter foreign markets. This approach has already been implemented and resulted in successful export performance by SMEs clustered in other countries or industrial regions (Ketschen Jr. et al., 2004). Although the selected countries have made some steps forward in the process of market-oriented reforms and in approaching EU standards, further progress is still needed, however, to establish an attractive framework conducive to investment and sustainable growth, driven by private sector development (Broadman et al., 2004).

Regarding the clusters initiatives, it is evident that in all of the selected countries the number of clusters has been increased between 2011 and 2013. However, it should be noted that while all of the newly established clusters are easy to register, there is no precise evidence if all of the existing ones are really functional. Some of them might exist formally only, in spite of in some cases substantial support, provided either by governmental institutions or international donor organizations.

Chapter 4

4. Research methodology

This chapter will first look at research philosophy which helps researchers identify once own ontological and epistemological orientation. After explaining why the combination of critical realism and pragmatism philosophy has been adopted, the chapter continues with describing the research methodology and design, concentrating on both, quantitative and qualitative aspect. As an applied research, which aims at solving specific, practical questions in the field of cluster development and cluster policy, this study has combination of descriptive, correlation and explanatory objectives. In the sub-section of research approach in addition of providing an overview of the research approach, the structure of the research process will be presented.

The next section rationalizes the chosen data collection techniques as well as methods for analysis of the obtained data. Following the trend that in survey practice multiple modes of data collection or mixed-modes are considered to provide effective results, in this research, due to the size of the sample, questionnaires in combination with semi-structured personal interviews have been used for collecting primary data. Description of the process of questionnaire development and overview of sample size and response rate, was followed by explanation of the main statistical tools that have been used for survey data analysis - descriptive statistics via frequencies, one-way analysis of variance (ANOVA), post hoc analysis, factor analysis and regression analysis. Then the process of using interviews, as a qualitative method that complemented questionnaire survey was presented, which was followed by a section on reliability and validity. For measuring internal validity of the questions Cronbach alpha was used.

4.1 Research philosophy

Based on the assumptions researchers have about the way the world operates and the commitment held to particular views two main research philosophies are described by the literature: ontology and epistemology. While ontology is concerned with the nature of

reality, epistemology, the study of the foundations of knowledge, presents the researcher's view regarding what constitutes acceptable knowledge and examines the nature of the established premises and how they work.

Two aspects - objectivism and subjectivism - have been mostly discussed among business and management research (Saunders et al., 2009). Subjectivism builds on premises that phenomena are created from the perception and consequent actions of social actors concerned with their existence, while objectivism describes the existence of social entities in reality that is external to those social actors concerned with their existence (Saunders et al., 2009).

Saunders et al (2009) distinguish between various social science paradigms which are used in management and business research – positivism, realism, interpretivism and pragmatism. In their view the "interpretive paradigm" is the philosophical position which tends to give an insight on how humans attempt to describe or interpret the world around them (interpretivism). Burrel and Morgan (1982) argue that positivism deals with positive facts and its primary goal is not only description of observable phenomena but their prediction and explanation. In addition it provides the basis for descriptive laws based on consistencies in patterns and properties. This epistemological perspective is characterised by absolute or varying degrees of generalizability and is quantitative, as it draws on measurable evidence.

The dilemmas about the validity of interpretive research paradigm and the need for developing appropriate criteria for evaluating qualitative research, contributed to emerging of "realist and critical realist paradigms". Realist ontology assumes that the real world objects can be separated from the human knowledge, and it represents the objective reality. However, since our ability to know this objective reality is imperfect, a critical realist paradigm appeared that claims that our view about reality must be subject to wide critical examination to achieve the best understanding of reality possible. In terms of epistemological perspective realists cannot separate themselves from what they know. The realist paradigm provides an objective reality against which researchers can compare their claims and the extent to which they ascertain truth. However, the realist paradigm

also recognises that researchers 'values are inherent in all phases of the research process and therefore the objective reality cannot be apprehended in a perfect way. According to Guba and Lincoln (1994), in addition to quantitative methods and careful sampling and specific research techniques, in order to achieve higher objectivity, rigorous qualitative research methods need to be used.

The combination of critical realism and pragmatism philosophy are selected as suitable for this research, because they will enable the researcher to best answer the research questions. The focus of this research aims at proposing suitable recommendations to policy makers and managers/owners of cluster members and pragmatism philosophy is often referred to as "action research", which produces practical knowledge that is useful to people in the everyday conduct of their life (Reason and Bradbury, 2001).

4.2 Research methodology and design

While research is defined as "a logical and systematic search for new and useful information on a particular topic" (Rajasekar et al, 2006), the research methodology determines the most appropriate method for the research project. As an applied research, which aims at solving specific, practical questions in the field of cluster development and cluster policy, this study has combination of descriptive, correlation and explanatory objectives. While the descriptive objective attempts to describe systematically a situation, problem, phenomenon or describes attitudes or perceptions towards certain issue, and correlation research attempts to discover the relationship or interdependence between two or more aspects of a situation, the explanatory part deals with clarifying why and how there is a relationship between two or more aspects of a situation or phenomenon (Dawson, 2002)

Two broad types of research methodologies can be recognized - quantitative and qualitative research methodology (Tashakkori and Teddlie, 1998). Quantitative research methodology is based on the measurement of quantity or amount and there the process is expressed or described in terms of one or more quantities (Rajasekar et al, 2006, Creswell,

2002). Such research, which first emerged in the natural science, is mainly concerned with exploring issues that could be observed and measured in a way so that such observations and measurements can be made objectively and repeated by other researcher (Lacey & Luff, 2001). The quantitative research methodology can generate strong reliability and validity (Amaratunga et al., 2002; Cavana et al., 2001), because it aims to control or eliminate extraneous variables within the internal structure of the study, and the data produced can also be assessed by standardized testing (Duffy, 1985).

When topics such as human behaviour, covered in social sciences are researched, however, it is particularly challenging to apply measurement terms for their description. While measurements explain the frequencies of occurrences, qualitative research approach is concerned with qualitative phenomenon involving quality and as non-numerical, descriptive, applies reasoning and it aims at getting the meaning, feeling and describe the situation. (Rajasekar et al, 2006). As a subjective way to look at life as it is lived and an attempt to explain the studied behaviour (Walsh, 2003), it gives an answer to the question "why" things happen, and "why" they happen in particular way. (Lacey and Luff, 2001).

Qualitative research methodologies deal with non-numerical data, which could be collected thorough personal interviews, focus groups or case studies (Neuman, 2006; Cavana et al, 2001). In addition, qualitative approach involves collecting large amount of relatively rich information and is appropriate for inductive hypothesis-generating research, as opposed to hypothesis testing (Silverman, 2006). There is no explicit intention to count or quantify the findings, which are instead described in the language employed during the research process (Leach, 1990). It should be taken in consideration, however, that it tends to emphasise data that supports the researcher‘s argument – which is limited to indications of contrary evidence being sought. Consequently, results can vary from research to research, becoming problematic when researchers become fixated on exploratory research and do not progress beyond this to the hypothesis testing stage (Silverman, 2006).

While in quantitative research, the investigators maintain a detached, objective view in order to understand the facts, a qualitative approach is used as a vehicle for studying the empirical world from the perspective of the subject, not of the researcher (Duffy, 1986, Duffy, 1987). Due to the close relationship between researcher and respondent, Duffy (1986) argued that strength of such an interactive relationship is that the researcher obtains first-hand experience providing valuable meaningful data. As the researcher and the subject spend more time together, the data are more likely to be honest and valid (Bryman, 1988). The weakness of such a close relationship is the likelihood that it may complicate the research process, because of the possible effect of the researchers' presence on the people they are studying (Ramos, 1989), resulting in subjectivity and distorting the findings (Cormack, 1991).

Since both approaches have their strengths and weaknesses, permanent discussions have been held about which approach is more appropriate (Lincoln and Guba, 1985). According to Howe (1988), strict supporters of one or the other approach, are convinced that either quantitative or qualitative is more appropriate for research and they argue that they are excluding each other. Supporters of quantitative approach (Maxwell and Delaney, 2004, Nagel, 1986) argue that social researches should be conducted the same objective way as physical scientists treat a physical phenomenon and claim that real causes of social scientific outcomes can be also determined with reliability and validity.

Because of the lack of ability to provide measurable information Nunnally and Bernstein (1994), Denzin and Lincoln (1998) argue that qualitative approaches are displacing outdated quantitative approaches and even claim that quality research methodology is completely non-scientific. Worrall's (2000) arguments are in the same line arguing that qualitative research will remain secondary, since whether intentionally or not, it only sets the theoretical stage for quantitative analysis.

Supporters of qualitative approach, such as Cormack (1991) argue that quantitative methods treat people merely as a source of data, since the research participants are usually kept in the dark about the study, and are often left untouched by the research itself but are expected to transfer the findings into practices. Qualitative methods also provide a depth

of understanding of issues that is not possible through the use of quantitative, statistically-based investigations (Tewksbury, 2009)

Other group of authors, such as Collis and Hussey (2009) and Johnson and Onwuegbuzie (2004), however, believe that appropriateness of each approach depends on topic which is subject of the research, thus, both qualitative and quantitative methods can be important and useful when used together. Aiming at building on strengths and compensating for weaknesses of both approaches, the mixed method research is a way for researchers to think about the traditional dualism that has been debated by the followers of the qualitative and quantitative paradigms and take a pragmatic position that will improve communication amongst researchers as they advance through the knowledge (Johnson and Onwuegbuzie, 2004). The mixed methods have been supported especially within business and management research (Curran and Blackburn, 2001).

The mixed research method has been chosen for this research because from one aspect a quantitative research methodology and survey-based research allow broad range of data to be generated, across a large sample of SMEs, both cluster members and non-members in Republic of Macedonia (FYROM), Bulgaria and Serbia. The quantitative methodology also allows a comparative analysis to be conducted between cluster and non-members, as well as between the selected countries. On the other hand, since SME clusters do not function in a vacuum and due to the complexity of the social environment in all three countries, the qualitative research design was used in addition.

4.2.1 Research approach

Two broad research approaches are used in conducting research – inductive and deductive. Inductive approach starts from addressing specific issues and derives broader generalizations and theories, while in deductive approach there is a flow from general theories to specific events and observations. Inductive reasoning is more open-ended and exploratory according to Seale (2006) and conclusions involve a higher degree of uncertainty, while a deductive approach follows logically from the available facts and

tends to start with observations and detecting patterns which leads the researcher to develop new theories (Bryman, 2004, Creswell, 2002).

The deductive research starts with a theory and is driven by hypotheses that are being tested (Creswell, 2002; Dale et al., 1998; Oppenheim, 1992). In general, deductive research is theory-testing and inductive research is theory-generating (Creswell, 2002; Hammersley and Atkinson, 1995). This study applies deductive research approach, since it starts with exploring theory concepts about clusters and uses mixed research method, involving both quantitative and qualitative research methodologies. Survey questionnaire, as an instrument for quantitative and qualitative approach through personal interviews, were combined, in order the research questions to be answered.

Regarding the approach towards collecting data a combination of data collection methods were used in order to maximize the benefits and building on strengths of each of them. In addition a mixed methodology approach is expected to increase both the validity and reliability of the data.

The research was started with developing theoretical framework through extensive literature review. The literature review provides an overview of existing cluster theory concepts and according to Rajasekar et al, (2006) helps us to sharpen the problem, get proper understanding of it, acquires proper theoretical and practical knowledge for investigation, shows how the selected problem relates to the previous research studies and learns if the proposed problem had already been solved. The research involved secondary analysis of available information in academic journals, review articles, conference proceedings, advanced level text books, on-line databases, postgraduate dissertations and theses, official government reports and white papers. Mostly used databases for accessing academic articles include, EBSCO host for academic search elite, as well as Emerald Full Text, on-line thesis and paper based thesis. The findings from the literature review were used for developing conceptual Cluster Model, describing the cause effect relationship between the preconditions for cluster development, cluster benefits and competitiveness. The findings also provided valuable information for developing survey questionnaire in the later stages.

After developing theoretical framework, a mixed research method, using both quantitative and qualitative methodology was selected, based on deductive research approach. Survey questionnaire was developed based on the findings from the literature. During the process of designing the questionnaire, a telephone interview was conducted with pilot cluster members and cluster support institutions in order eventually additional input about preconditions, barriers, benefits and competitiveness indicators used in selected countries to be identified, which have not been derived from the literature. For that purpose the Act Frequency Approach was used. The Act Frequency Approach is an approach that attempts to measure dispositions, or the tendency to behave in a certain way (Buss and Craik, 1983). After twenty companies and twelve cluster support institutions have been interviewed, the alternative answers were exhausted and according to the Act Frequency Approach further examination was not necessary. This was followed by distribution of the questionnaires to larger number of SMEs, thus making better generalization of the results. The cluster members and cluster support organizations were selected based on random sample, taking in consideration equal representation from all three countries.

Information about cluster members was obtained mainly from GIZ offices in Skopje, Sofia and Belgrade, since GIZ has been implementing SME or cluster support programs in all of the selected countries on behalf of German Development Cooperation. Additional information about existing clusters has been received from cluster support projects, where the researcher has been involved as a short term consultant during the research period. Only companies which have been members of formalized clusters have been considered as cluster members.

In order to get comparable data regarding perceptions, behavior patterns and firm's performance, when selecting the cluster members, few main criteria, such as presence in all three countries, year of establishment, importance for the economy and level of activity, have been taken in consideration.

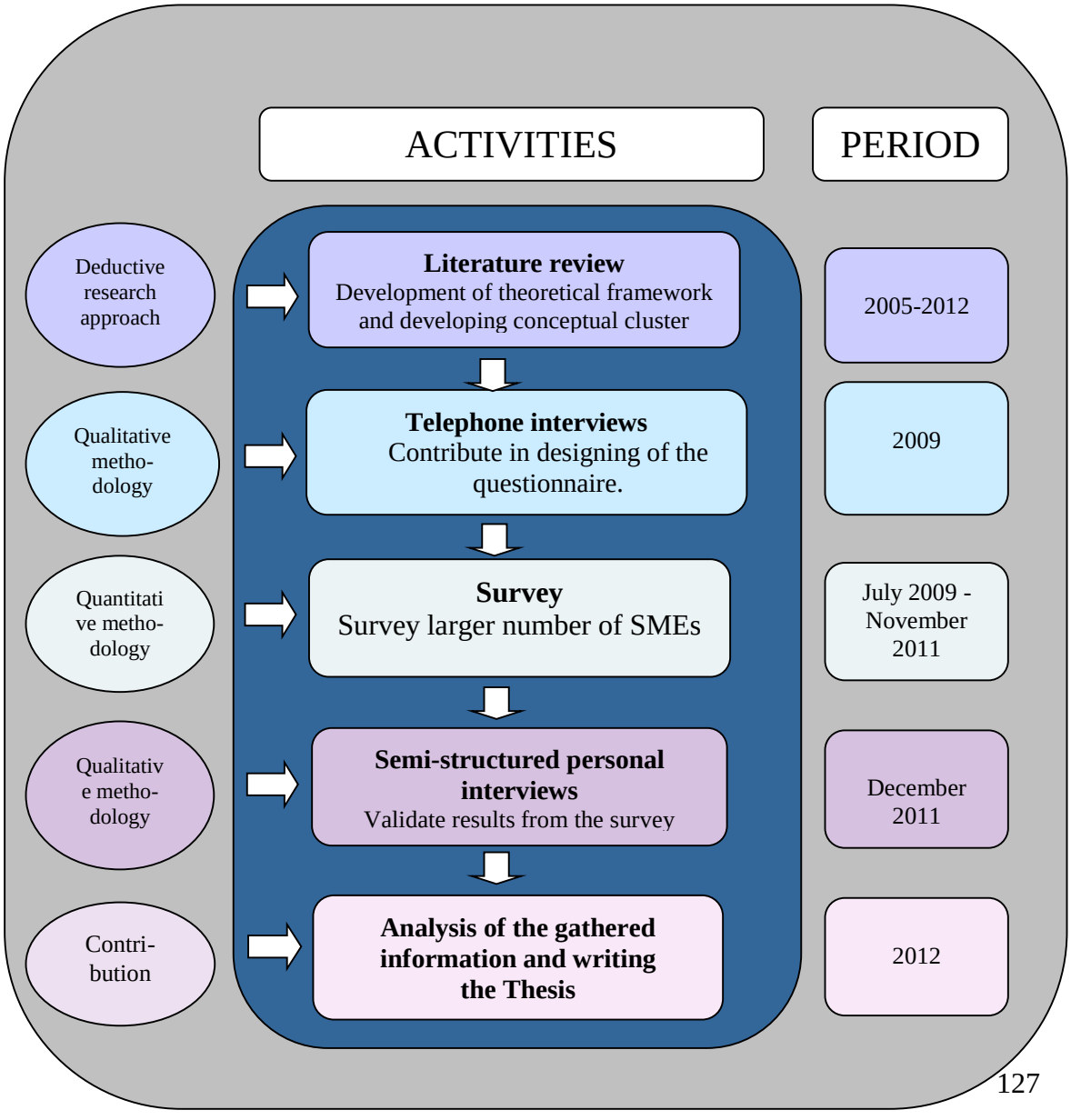
In spite of the intention to do so, it was not possible to identify critical number of clusters from similar economic sectors, because either some of the clusters were not existent in some of the analyzed countries during the survey period, or if they existed, they were just formally active without any real activities. Therefore there is a difference between the structures of the cluster members in the selected countries, which is considered as one of the limitations of this research. For example, only ICT clusters from all three countries have been represented in the survey. Cluster members from apparel and tourism clusters from Bulgaria and Republic of Macedonia (FYROM) participated in the research, while Bulgaria and Serbia shared same cluster members from the wood processing clusters.

The year of establishment was also taken in consideration when decision about selecting cluster members was made, because the cluster members receive economic benefits asymmetrically, depending also on their life cycle (McCann et al., 2011). However, if analyzed independently, the years of experience, do not necessarily guarantee the comparability of the results, because the level of performance of cluster in all three countries was also influenced to great extent to the level of received of support from international donor organizations. That means that some of the established clusters which have not been supported in financial or non-financial terms, have not been active at all, and therefore were not involved in the survey.

Regarding the non-members, they have been identified through databases of chambers of commerce, business associations, business support organizations, governmental institutions and GIZ offices in Bulgaria, Republic of Macedonia (FYROM) and Serbia. The size of their sample was aiming to match the number of the cluster members. To certain extent the structure of the surveyed non-members matches the structure of the cluster members, but it should be stressed that they do represent much smaller percentage of the total population, than compared with cluster members. Although the non-members are not the main focus of this research and the goal was differences in perceptions between the two groups to be examined, the size and the structure of the sample should be considered as one of the limitation in the research methodology.

After collecting information from 300 surveyed companies, 150 cluster members and 150 non-members, additional semi-structured personal interviews with sixty respondents of the questionnaire survey were carried out to verify the findings from the questionnaire and eventually to obtain additional, qualitative data, which might contribute for better answering of the research questions. Personal interviews were conducted with sixty managers (thirty cluster members and thirty non-members), twenty in each of the selected countries, which represent 20% from the total number of the previously surveyed companies. The sequence of the deductive approach of the research process - literature review, telephone interview, questionnaire survey, personal interview, etc. is explained in the Figure 4.1

Figure 4.1 Deductive approach in the research process



4.3 Data collection and analysis

This section rationalizes the chosen data collection techniques as well as methods of analysis of the obtained results. Data collection strategies and methods cannot be chosen in a vacuum. According to Lyberg and Kasprzik (1991) typically, a researcher decides for one (or multiple) data collection techniques while considering its overall appropriateness to the research, along with other practical factors, such as: expected quality of the collected data, estimated costs, predicted response rates, expected level of measure errors, and length of the data collection period. Within each general research approach, various data collection techniques may be used, although it is possible that a given research question may not be satisfactorily studied because of lack of applicability of specific data collection techniques (Kerlinger, 1986).

The most popular data collection techniques include: surveys, observations, questionnaires, interviews, focus groups, etc. All of them have certain advantages and disadvantages. For example, questionnaire would be more appropriate for surveying a large sample of companies scattered throughout a larger geographical region, than interviews. For completing a survey in a short period of time telephone interview would be most appropriate, while for surveying a low-income, low-education population, chances are that the face to face interview will be the only suitable method. Personal interviews or telephone interviews, for example, have a number of advantages, such as opportunity for feedback and probing of complex answers.

In determining which data collection method to be used, the research questions have been carefully examined, since an optimal data collection method is defined as the one, which takes into consideration the research question and given certain restrictions (Biemer and Lyberg, 2003). In addition, in the process of deciding about the data collecting method, the own personal abilities of the researcher in carrying out the selected approach was taken in consideration. Following the trend that in survey practice multiple modes of data collection or mixed-modes have become more and more popular (de Leeuw, 2005), in this research, due to the size of the sample, questionnaires in combination with semi-structured personal interviews have been be used for collecting primary data. The survey

of larger number of SMEs, allowed the author to be able to generalize the research results, while semi-structured contributed for testing the findings of the survey.

4.3.1 Survey questionnaire

According to Saunders et al. (2003) the decision regarding whether the questionnaires should be used, among other things depends on number of the selected respondents the size of the sample, and type and number of the questions to be answered. Questionnaire is one of the most frequently used instruments for data collection due to its effectiveness in gathering empirical data from a large sample (Saunders et al, 2003, McClelland, 1994). Surveys have weaknesses, however and they have to be seriously taken in consideration, when deciding about selecting appropriate data collection method. For example, they are of little value for examining complex social relationships and tacit beliefs and deeply held values. In addition, although controlling accuracy, a survey cannot assure without further evidence that the sample represents a broader universe. Thus, the method of drawing the sample and the sample size are critical to the accuracy of the study and its potential for generalization (Saunders et al, 2003). Also, when using on-line questionnaires, the researcher is not able to interact with the respondent and has to rely totally on the honesty and accuracy of their responses. The researcher is not even able to be sure that the intended respondent is the actual respondent.

The survey questionnaire which was designed for answering the research questions is presented in the appendix A. It produced broad data enabling statistical and comparative analysis to be conducted across a representative sample of cluster members and non-members in SMEs in Bulgaria, Republic of Macedonia (FYROM) and Serbia.

4.3.1.1 Questionnaire development

According to Tull and Hawkins (1993) the overall questionnaire should reflect the objectives of the research and move from one topic to another in a logical manner. Therefore, in designing the questionnaire, in order to provide clear structure and logical sequence of thoughts, thirty four questions were designed in such a way that the same

topics were grouped together to aid dynamics and the flow of reading and answering. The questions were grouped in the following sections,

1. *General information* – This section included twelve questions that can be grouped in three sub-groups. First sub-group aims at gathering information about representative of the surveyed company who fills the questionnaire (position, gender, age, level of education, etc.), the second sub-group deals with company data, such as legal status, years of operation, size, economic sector, type of business/cluster, and the third sub-group of questions are related to measuring cooperative culture or networking capacities of the company.
2. *Clusters, preconditions and barriers* – Six questions aiming at exploring the familiarity with the cluster approach, preconditions and barriers for cluster development.
3. *Clusters and competitiveness* – Eight questions about the benefits, as a result of being a cluster member and impact of their competitiveness.
4. *Cluster policy* – Eight questions related to the awareness about the existing cluster support organizations and effectiveness and efficiency of the cluster support programs.

Since it influences the responses rate (Saunders et al., 2003), when distributed the questionnaires were accompanied by correspondence letter, which contained the following: (1) the purpose and the importance of the study, (2) assurance of complete confidentiality, (3) directions for responding to each question, (4) gratitude of the writer to respondent‘s participation, (5) the questionnaire itself and (6) an option for receiving a final report about the research. Besides open questions, such as “How would you define a cluster?”, for collecting primary data in the questionnaire a list of questions were used where respondents were given different alternatives to choose from. Those alternatives have been derived from both, literature review and telephone interviews, which have been conducted prior to designing of the questionnaire. In cases where respondents were required to express attitude and state how strongly they agree or disagree with a certain statements, Likert-style rating scale was used where numbers reflected their feelings (Sounders et al., 2003). In certain cases grid questions were used as well. Before

distributing the questionnaires, a pilot study has been conducted with 15 companies in order to ensure its internal validity (Saunders et al, 2003).

4.3.1.2 Sample size and response rate

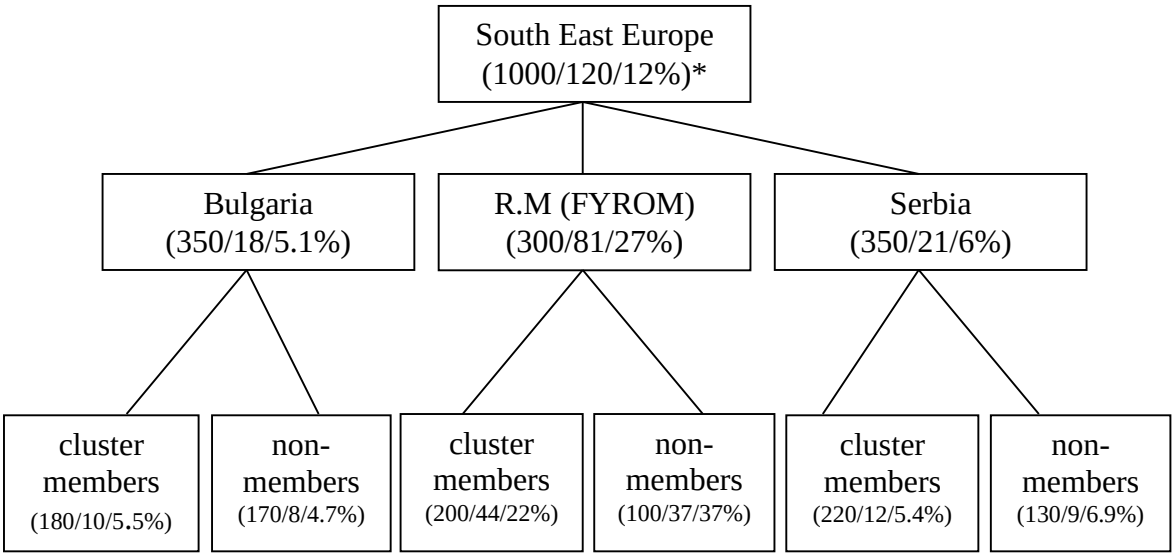
After choosing suitable sampling frame, the five main probability sampling techniques according to Saunders et al. (2003) are the following: simple random, systematic, stratified random, cluster and multi-stage. Following the notion that the probability sampling is influenced by the type of research questions, the need for face-to face contact and geographical area over which the respondents are spread, the research used cluster sampling. In order to take advantage of personal contacts which are developed through researcher's professional engagement with GIZ and its offices in the selected countries, convenience sampling technique was used. According to Sounders et al., (2003), convenience or haphazard sampling consists of selecting those cases that are easiest to obtain for the desired sample and the process of selecting the sample goes on until reaching the required sample.

For this research geographical cluster sampling method has been used in combination with non-proportionate quota sampling. First the respondents have been grouped according to geographical areas – three selected countries in SEE – Bulgaria, Republic of Macedonia (FYROM) and Serbia. Than non-proportionate quota sampling method is a method for selecting survey participants, used when it is important to ensure that a number of sub-groups in the field of study are well-covered and when comparing the results across the sub-groups is foreseen (Groves, et al., 2010). The sub-groups in this research are cluster members and non-members. While in proportionate quota sampling, the sample size from each sub-group is proportionate to the size of the sub-group in relation to the overall the population, the non-proportionate method does not do this balancing, because the exact proportions are not known. That means that although the same number of cluster members and non-members were surveyed in each of the selected countries, they do not represent the equal percentage of total number of clusters in their countries, and this limitation should be taken into consideration.

Another risk with cluster sampling is that some geographic areas can have different characteristics. For example in spite of the similarity in their historical and political background the selected countries in transitions, do have their specific characteristics, which have to be taken in consideration. In addition, in quota sampling, the selection of the sample is non-random and therefore can be unreliable, in a sense that the selection of cluster members and non-members can be biased, since not every company has a chance to be selected. For example, the researcher might be tempted to survey only companies from more successful clusters, or from certain type of industrial sector. This causes uncertainty about the nature of the actual sample and quota versus probability sampling method has been a matter of controversy for many years (Moore and McCabe, 2005).

The questionnaire was self-administered and distributed electronically to a sample size of one thousand companies, out of which six hundred cluster and four hundred non-members, located in three countries. The response rate of the on-line questionnaire was 12%, which means one hundred and twenty out of thousand companies have sent back the filled questionnaires. According to comparative analysis elaborated by Nulty (2008) the response rate is low, since the adequate response rate for on-line surveys is considered to be between 20 and 47%, while paper based survey can produce response rate of 75%.

Figure 4.2 On-line distribution of the questionnaires



Keys: * number of on-line distributed questionnaires/ number of returned ones/ response rate.

In the Figure 4.2 the on-line distribution of the questionnaires is presented. The first number in brackets is the number of on-line distributed questionnaires, the second is number of returned ones, and the percentage is the response rate.

The response rate in Republic of Macedonia (FYROM) is highest, 27% (22% for cluster members and 37% for non-members) because of the previously established contacts between the researcher and the surveyed companies. In spite of the higher number of distributed questionnaires in Bulgaria and Serbia (350 in each of them), compared to Republic of Macedonia (FYROM) (300), the number of returned questionnaires was significantly lower. The response rate in Bulgaria was 5.1% (5.5% for cluster members and 4.7% for non-members), while in Serbia was 6% (5.4% for cluster members and 6.9% for non-members).

The number of electronically distributed questionnaires varies between countries, because of different availability of information and difference in the cluster samples in the selected countries. Information about cluster members was obtained mainly from GIZ offices in Skopje, Sofia and Belgrade, since GIZ has been implementing SME or cluster support programs in all of the selected countries on behalf of German Development Cooperation. Additional information about existing clusters has been received from cluster support projects, where the researcher has been involved as a short term consultant during the research period.

At the beginning of the questionnaire the respondents were asked to state if they are belonging to a formalized cluster or to describe in what other kinds of cooperation networks they are involved in. Only companies which have been members of formalized clusters have been considered as cluster members. Members of business associations, consortiums, or any other type of networks or alliances have not been considered as cluster members, although some of them apply cluster approach in their activities. The clusters, which provided a base for surveying the cluster members, were selected based

on their size and importance for the economy, but also based on the previous contacts that have been made by the researcher either personally, or through GIZ offices, where he is professionally engaged. The cluster members sample framework is presented in table 4.1.

Table 4.1: Cluster members sample framework

	Total	**Bulgaria**	**RM (FYROM)**	**Serbia**
Number of clusters				
Total number of clusters in 2013	67	27	19	22
Total number of active clusters when the survey took place (2011)	47	18	13	16
Number of clusters involved in survey	18	7	4	7
% of surveyed clusters from active clusters in 2011	38 %	39 %	31 %	44 %
Number of cluster members				
Total number of cluster members in 2013	1,929	438	523	968
Total number of members in active clusters when the survey took place (2011)	1,560	320	462	758
Number of surveyed cluster members	150	50	50	50
% of surveyed cluster members from total number of cluster members in 2011	10	16	11	7

The Table 4.1 provides information about the cluster sample from two aspects. Horizontally, the first part provides an overview of number of cluster initiatives, which were included in the survey. In addition to absolute figures, the percentages show the relative contribution of the surveyed clusters to the total number of cluster in 2011. The second part of the table presents the contribution of the surveyed cluster members in the total number of cluster members in 2011. In addition to providing information about total number of cluster initiatives and cluster members, the columns describe the situation in each of the countries separately. From the clusters that have been involved in the research, it is evident that surveyed clusters significantly represent the total number of cluster initiatives. Out of total number of 67 clusters that existed in all three countries in 2011, 38% were involved in the research. The most representative sample is in Serbia with 44%,

while in Bulgaria and Republic of Macedonia (FYROM), the sample is 39% and 31% respectively.

When the cluster members are considered, since the companies are the main focus of the research, the sample is smaller. Total of 150 cluster members have been surveyed in all three countries, which present 10% of the total number of cluster members. There was equal number of cluster members from each of the country (50), but due to the differences in the total number of cluster members, there is different level of representation. The sample is most representative in Bulgaria – 16%, while in Republic of Macedonia (FYROM) and in Serbia, the percentage of the surveyed companies is 11% and 7% respectively.

Regarding the number of clusters, the Table 4.2 shows that the total number of surveyed 150 cluster member from three countries belong to nine cluster, more than 95% are represented in seven clusters and almost three quarters from the cluster members of all three countries (73.8%) belong to four industries (IT, tourism, furniture and metal and plastic processing).

Table 4.2 Structure of the cluster members in all three countries

Type of clusters	Cluster members in all countries (%)
IT	24.0
tourism	18.3
furniture	16.7
metal/plastic processing (automotive components, agricultural equipment, plastic)	14.8
textile	9.7
agriculture (honey, cheese, flowers)	7.1
wine	4.8
other	4.3

From a perspective of economic sector, almost half of the surveyed cluster members (49,7%) belong to the production or manufacturing sector, one third (32,9%) to the

service, 10,7% are agriculture related businesses and the lowest number are trading companies (6,7%).

Non-cluster members have been identified through databases of chambers of commerce, business associations, business support organizations, governmental institutions and GIZ offices in Bulgaria, Republic of Macedonia (FYROM) and Serbia. With regard to the sample framework of non-members, total number of companies in all of the selected countries should be taken in consideration. Compared to the cluster members, the sample of non-members is much lower, due to the fact that the total number of on-members is much bigger. The number of companies in each of the selected countries is presented in Table 4.3

Table 4.3: Number of companies in the selected countries

	Total	**Bulgaria**	**RM (FYROM)**	**Serbia**
Micro	407,976	278,139	57,775	72,062
Small	14,695	23,950	3,361	8,939
Medium-sized	7,124	4,345	658	2,121
SMEs	451,350	306,434	61,794	83,122
Large	1,321	681	131	509
Total	**452,671**	**307,115**	**61,925**	**83,631**

Source: SBA Fact Sheets Bulgaria, Republic of Macedonia (FYROM and Serbia, 2012,

In all of the selected countries 50 non-members have been involved in the survey, which makes a total of 150. Since the non-members are not the main focus of this research, the size of the sample was aiming to match the number of the cluster members, but it should be stressed that they do represent much smaller percentage of the total population, than compared with cluster members, and it should be considered as one of the limitation in the research methodology.

In order to increase the response rate, additional one hundred and eighty questionnaires have been distributed directly to the representatives of the companies, during cluster workshops and various SME oriented events, such as conferences, B2B meetings and

trade fairs in all of the countries. In Bulgaria forty cluster members and forty two non-members, in Republic of Macedonia (FYROM) six cluster members and thirteen non-members, while in Serbia thirty eight cluster members and forty one non-members have filled the questionnaires in the presence of the researcher.

For assessing the understanding about the cluster development all of the surveyed companies have been asked to define a cluster (question B1 – "How would you define cluster"). In order the comparison between cluster members and non-members to be possible, only those non-members that provided definition that showed that they have at least basic understanding about what clusters are, were included in the survey. Since most of the non-members have been directly accessed at various cluster events, only few have been excluded from the survey, because of not having any knowledge about the clusters. However, although the aim of comparison is to show if there is a certain pattern behind the perceptions of cluster members to non-members, this limitation of not having the same knowledge about clusters, needs to be taken in consideration when comparing both groups.

After all questionnaires have been collected, there was equal representation of the selected countries - hundred companies, fifty cluster members and fifty non-members in each of the countries. The survey was conducted over the period of thirty months between July 2009 and December 2011. Most of the questionnaires have been collected in the last quarter of 2011

4.3.1.3. Survey data analysis

All responses were analysed together by using a standard Statistical Package for Social Scientists (SPSS). In order to facilitate the data analysis, the data was coded numerically. The following statistical tools were used:

1. *Descriptive statistics via frequencies* - Descriptive statistics is the discipline of quantitatively describing the main features of a collection of data and provides simple summaries about the sample and about the observations that have been made

(Mann, 1995). The descriptive statistics was used in analyzing the first section of the questionnaire, where mainly general information about the respondents was obtained. Frequency distribution, which is the foundation of descriptive statistics, summarize and compress data by grouping them into classes and recording how many data points fall into each class.

2. *Compare means through a one way ANOVA* – The one-way analysis of variance (ANOVA) compares the means between different groups and determines whether any of those means are significantly different from each other. In this research ANOVA was used in two cases, first to examine whether certain behavior or perception of companies differ based on their participation in cluster initiatives, or based on the fact that they are cluster members or not and second, to determine whether there are significant differences between the companies from the three selected countries. In the first case the groups are cluster members and non-members, and in the second the independent groups are three countries that are subject of this research - Bulgaria, Republic of Macedonia (FYROM) and Serbia. In order the research questions to be answered one way ANOVA has been used for the following combinations of identified groups:
    a) Cluster members vs. non-members in all three countries
    b) Cluster members vs. non-members by country
    c) Comparison of both cluster members and non-members between countries (ANOVA country – all SMEs)
    d) Comparison of cluster members between countries (ANOVA country – cluster members)
    e) Comparison of non-members between countries (ANOVA country – non-members)

    This is a case of one-way or one-factor ANOVA since the companies are considered as one factor, in both cases, when two levels (cluster members vs. non-members) or three levels (Bulgaria, Republic of Macedonia (FYROM) and Serbia) were used. The term one-way, also called one-factor, indicates that there is a single explanatory variable, in this case company, with two or more levels, and only one level of treatment is applied at any time for a given subject. In a case of comparing the means

of cluster members vs. non-members an independent sample T-test could be used as well, since the explanatory variable has exactly two levels, but the results would be the same. When there are more than two independent groups, such as the case with the three countries, one-way ANOVA as a statistical test, cannot provide information about which countries are significantly different from each other, but it only indicates that at least two countries are different. Therefore, for going deeper into identifying specific differences between the countries, additional post hoc analysis has been used.

3. *Post hoc analysis* - Post hoc tests are designed for situations in which at least three means have already been compared, but an additional exploration of the differences among means is needed to provide a specific information on which means are significantly different from each other. In this research Post Hoc test was used in conjunction with ANOVA to determine which of the selected counties are statistically different from each other. It was used only in cases where value of ANOVA was below 0,100. Since all pairs of means have been compared, the Tukey was selected as post hoc procedure.

4. *Factor analysis* - Factor analysis is a variable reduction technique (Suhr, 2009) or a method for investigating whether a number of variables of interest Y1, Y2,: : :, Yl, are linearly related to a smaller number of unobservable factors F1, F2, : : :, Fk.
These variables correlate highly with a group of other variables, but correlate very badly with variables outside of that group and they could well measure one underlying variable, which is called a 'factor' (Field, 2000). In order to improve interpretation in this research factor analysis as a type of statistical procedure was conducted by rotated component matrix. Factor analysis was used only for the questions with more than two alternatives, and it was conducted for all countries, as well as for each of the selected countries separately. The results have been presented in a summarized table for each of the questions, but have been placed in Appendix only (Appendix C), since they are not directly linked with the research questions. The "% of variance" column indicates how much of the total variability (in all of the variables together) can be accounted for by each of the summary scales or factors.

5. *Regression analysis* – Regression analysis is a technique used to explore relationships between variables for the purpose of predicting and forecasting future values. Following the fact that a regression analysis is done either to predict the value of the dependent variable for individuals for whom some information concerning the explanatory variables is available, or in order to estimate the effect of some explanatory variable on the dependent variable, in this research it was used for predicting if the surveyed company is a cluster member or not. It was aiming at ascertaining the casual effect of one variable upon another – the size of a company upon being a cluster member or not, for example. To explore such issues, different data have been assembled on the underlying variables of interest and regression has been employed to estimate the quantitative effect of the causal variables upon the variable that they influence. Then the "statistical significance" of the estimated relationship has been assessed, that is, the degree of confidence that the true relationship is close to the estimated relationship. At the outset of any regression study, one formulates some hypothesis about the relationship between the variables of interest, like here clusters and size of firm, or economic sector, etc.

   While multiple regression analysis is capable of dealing with an arbitrary large number of explanatory variables, the linear regression explains linear dependence: constant rate of increase of one variable with respect to another. Regression analysis with a single explanatory variable is termed "simple regression", but when used it has to be taken in consideration that in reality, any effort to quantify the effects of a single variable upon another variable without careful attention to other factors could create statistical difficulties, which are termed omitted variable bias.

   For predicting of future outcomes, in regression analysis, a coefficient of determination is used, which is called the "R-square" of the model. R-squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination, or the coefficient of multiple determinations for multiple regressions. The definition of R-squared is fairly

straight-forward; it is the percentage of the response variable variation that is explained by a linear model.

R-squared = Explained variation / Total variation

R-squared is between 0 and 100%, 0% indicating that the model explains none of the variability of the response data around its mean, while 100% indicates that the model explains all the variability of the response data around its mean. For using the model for predictive or forecasting purposes, a high value of R square, suggesting that the regression model explains the variation in the dependent variable well, is particularly important. In general, the higher the R-squared, the better the model fits into data.

A key limitation of R-squared is that it cannot determine whether the coefficient estimates and predictions are biased and does not indicate whether a regression model is adequate. In addition, every time a new predictor is added to the model the R square increases and consequently, a model with more terms may appear to have a better fit simply because it has more terms. For addressing these limitations adjusted R square is designed and it has been used in this research. The adjusted R-squared is a modified version of R-squared that has been adjusted for the number of predictors in the model. It compares the explanatory power of regression models that contain different numbers of predictors. Adjusted R-square measures the proportion of the variance in the dependent variable that was explained by variations in the independent variables (Gupta, 2000). It is a statistical term that tells us how good one variable is at predicting another. The adjusted R-squared increases only if the new term improves the model more than would be expected by chance. It decreases when a predictor improves the model by less than expected by chance. The adjusted R-squared can be negative, and in that case it is interpreted as zero. It is always lower than the R-squared.

The higher the adjusted R-square value the more correlation there is between the two variables and the closer it is to 1.0 the better can one variable be predicted by the other. If Adjusted R-square is 1.0, then given the value of one variable the value of

the other variable can be perfectly predicted. In a case it is 0.0, then knowing either variable does not help in predicting the other variable. According to Gupta (2000), the values of adjusted R-square outside the range 0 to 1 can occur where it is used to measure the agreement between observed and modelled values and where the "modelled" values are not obtained by linear regression.

4.3.2 Interviews

Due to the limitations of quantitative methods in researching behavior in social sciences, the quantitative research was complemented by a qualitative one, realized through telephone and semi-structured personal interviews. Kahn and Cannell (1957) describe interviewing as “a conversation with a purpose”.

During the process of designing of the questionnaire, a telephone interview was conducted with companies that are involved in clusters and cluster supporting institutions from each of the selected countries. When interviewing cluster support organizations, both government agencies and international donor organizations were taken in consideration. A telephone survey for less sensitive and controversial topics may produce a high response rate if the survey is conducted skillfully, but the personal contact can also bring social bias into the study (James et al. 1984).

Both cluster members and cluster support institutions were asked four questions:

(1) What are the preconditions for making a good cluster?
(2) What are the barriers for creating clusters in your country?
(3) What are the benefits the companies receive or expect to receive as a result of becoming a cluster member?
(4) How do the cluster members measure competitiveness, what competitiveness indicators they are using?

Although the companies are the focus of this research, cluster support organizations were also involved in the telephone interviews, because of their knowledge and understanding about the process of cluster development. The purpose of these questions was to assist the process of designing the questionnaire, by providing additional variables that have not

been mentioned in the cluster literature. For example, the small size of the market on the demand side was not considered as a barrier for cluster development, when the questionnaire was initially designed because it has not been mentioned in the literature, but was added as a variable after several interviewed companies from Republic of Macedonia (FYROM), underlined it as one of the barriers for cluster development. The rest of the alternatives about preconditions and barriers for cluster formation, expected benefits for cluster participants, as well as for the instruments for measuring competitiveness were given based on the findings from the literature.

In spite of all difficulties of conducting a qualitative interview by telephone, such as lack of reliability of received data or lack of control of non-verbal behaviour (Saunders et al., 2003) this method was chosen because only four questions were asked and the researcher has already established credibility with most of the interviewed institutions. In the process of identifying preconditions, barriers, cluster benefits and competitiveness indicators during the telephone interview, the Act Frequency Approach was used. The Act Frequency Approach is an approach that attempts to measure dispositions, or the tendency to behave in a certain way (Buss and Craik, 1983). After twenty companies and twelve cluster support institutions have been interviewed, the alternative answers were exhausted and according to the Act Frequency Approach further examination was not necessary.

In addition to telephone interviews, semi-structured personal interviews were used as another type of qualitative research methods. Semi-structured and in-depth, or non-standardized, interviews are used in qualitative research in order to conduct discussions not only to reveal and understand the "what" and the "how" but also to place more emphasis on exploring the "why" (Saunders et al.,2003, p.248). Also the advantage may include supplying a more precise evaluation of the situation in a company (Camison, 2003).

According to Saunders et al. (2003), managers are more likely to be interviewed, than to respond to a questionnaire, especially when the topic is close to their area of work and when they are reluctant to disclose any sensitive information in a written form. The

interviews lasted between 60-90 minutes each. For identifying different attitudes and perception of the interviewees, content analysis was used. Interviewing has limitations and weaknesses, however, which have been carefully considered. According to Camison (2003) a disadvantage of this method is that perceptions of the interviewees may present problems of subjectivity, functional bias or interpretation of the questions. The participants might be uncomfortable sharing all that the researcher hopes to explore, or they may be unaware of recurring patterns in their lives. Due to involving personal interaction, cooperation between the researcher and respondent is one of the key preconditions for obtaining reliable results. It also requires experience and competence from the researcher, because of proper comprehension and interpretation of the responses.

Particular strength of the interviews as a data collection method is that in addition to producing data relatively, combined with other data collection techniques, interviews, especially allow the researcher to understand the tacit behavior and deeper meanings of respondent's statements, especially with representatives of the business sector (Knight, 2000). Thus, while telephone interviews were used for designing the questionnaire, the semi-structured interviews have been used to confirm findings, clarify misconceptions or gathering additional quality information after the filled questionnaires have been collected.

The personal interviews were conducted with sixty representatives of the surveyed companies (thirty cluster members and thirty non-members), twenty in each of the selected countries, which represent 20% from the total number of the previously surveyed companies. They were chosen based on the level of fulfilment of the survey questionnaire, especially by the quality of responses of descriptive questions. Only those companies, which have not provided answer on descriptive questions in the questionnaire or in some questions, have chosen "other" as a variable, but without providing further details, were taken in consideration for an interview. Then, this was followed by applying stratified random sampling in both of the categories, cluster members and non-members in all of the selected countries.

With representatives from the cluster members the interview focused around their expectations from entering into cluster relations and reasons for deciding to become a member of an organized business cluster, as well as around benefits that they have received as a result of being a cluster member or the level of meeting their expectations. Non-members were asked why they do not participate in any cluster initiative. Is it because they have made conscious decision to stay out of clusters and if yes, why, or they are other reasons, such as for example not being informed.

4.3.3 Reliability and validity

Understanding the reliability and validity is important for understanding measurement in both theoretical and applied data gathering settings (Carmines, 1979). According to Carmines (1979) reliability is usually concerned with stability over time, while validity is concerned with whether or not the item actually elicits the intended information. Similarly Joppe (2000) defines reliability as the extent to which results are consistent over time and he argues that if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable. Regarding the validity, he states that it determines whether the research truly measures that which it was intended to measure or how truthful the research results are. For measuring internal validity of the questions Cronbach alpha was used. Cronbach alpha is particularly important (Iacobucci and Duhachek, 2003), but improper use can lead to situations in which either a test or scale is wrongly discarded or the test is criticized for not generating trustworthy results (Tavakol and Dennick, 2011). Table 4.4 provides a summary of Cronbach alpha results for the questions used.

Table 4.4 Internal validity of the questions – Summary of Cronbach alpha

	Cronbach Alpha			
Questions	**Overall**	**Bulgaria**	**FYROM**	**Serbia**
Section C				
Question C1	0.948**	0.935**	0.958**	0.946**
Question C2	0.703**	0.611**	0.760**	0.742**
Question C3	0.912**	0.907**	0.904**	0.928**

Question C6	0.741**	0.444*	0.691**	0.876**
Question C7	0.846**	0.808**	0.784**	0.924**
Question C8	0.920**	0.937**	0.848**	0.916**
Section D				
Question D2	0.897**	0.926**	0.905**	0.831**
Question D3	0.888**	0.873**	0.863**	0.930**
Question D4	0.728**	0.779**	0.743**	0.656**
Question D6	0.768**	0.730**	0.804**	0.762**
Question D7	0.761**	0.769**	0.841**	0.664**
Question D8	0.714**	0.719**	0.436*	0.797**

Keys: * $\alpha < 0.5$ unacceptable ** $0.1 \leq \alpha \leq 0.5$ acceptable

Following the commonly accepted reference levels for describing internal consistency using Cronbach's alpha - $\alpha < 0.5$ – unacceptable; $0.5 \leq \alpha < 0.6$- poor; $0.6 \leq \alpha < 0.7$ – questionable; $0.7 \leq \alpha < 0.8$ – acceptable; $0.8 \leq \alpha < 0.9$ – good; $\alpha \geq 0.9$ – excellent; (George and Mallery, 2003), it is evident that the overall reliability of the data is good. It is suggested, however, that interpretations of reported values of alpha are interpreted cautiously, since there is little consensus in the literature regarding the definition of alpha (Cortina, 1993) and since satisfactory levels of alpha depend on test use and interpretation (Shevlin, et al., 2000). Further, there is no universal agreement on the appropriate interpretation or what is an acceptable level of alpha (Boyle, 1991). According to Schmitt (1996), there is no sacred level of acceptable level of alpha and even relatively low levels of criterion reliability do not seriously attenuate validity coefficients. In some cases, measures with (by conventional standards) low levels of alpha may still be quite useful.

4.4 Summary

This chapter investigated the research philosophy, its paradigms and number of research techniques in order to identify the most appropriate research methodology to answer the aims and objectives of this study. Following this an investigation into the primary research techniques enabled the researcher to identify the most effective method for conducting a reliable and valid piece of research.

Chapter 5

5. Survey data analysis – descriptive statistics

5.1 Frequencies

The frequencies have been analysed for the section A, which covers general information about the surveyed companies and consists of twelve questions. The responses of all questions have been summarized in the Table 5.1.

The questions have been presented in the first column of the table. First group of questions aims at gathering information about representative of the surveyed company who fills the questionnaire (position, gender, age, level of education, etc.), the second group deals with company data, such as legal status, years of operation, size, economic sector, type of business/cluster, and the third group are related to measuring cooperative culture or networking capacities of the company.

The rest of the columns provide summarized information about responses in percentages in a way that will enable analysis of the research questions. The second column provides information about all SMEs in all three countries (both cluster members and non-members), while the third and the fourth one present separate responses from cluster members and non-members in all countries. This is followed by information in three separated columns (columns five, six and seven) about each of the selected countries. The country information is then split in two sub-columns for cluster members and non-members. The responses are presented in percentages.

Table 5.1 Frequencies for the section A – cluster vs. non-cluster members

Questions	All SMEs (%)	Cluster members (%)	Non-members (%)	Bulgaria		FYROM		Serbia	
				Cluster members (%)	Non-members (%)	Cluster members (%)	Non-members (%)	Cluster members (%)	Non-members (%)

A1	Position									
	Owner and GM	53.8	59.1	48.3	58.0	28.6	50.0	67.3	70.0	46.8
	Manager	29.6	25.5	33.8	26.0	42.9	38.0	21.8	12.0	38.3
	Other	16.6	15.4	17.9	16.0	28.6	12.0	10.9	18.0	14.9
A2	Gender									
	Male	71.1	76.7	65.6	68.0	71.4	82.0	76.4	80.0	46.8
	Female	28.9	23.3	34.4	32.0	28.6	18.0	23.6	20.0	53.2
A3	Age									
	20 - 34 years	30.2	20.1	40.3	16.0	38.3	18.0	30.9	26.5	53.2
	35 - 49 years	47.3	49.0	45.6	50.0	51.1	58.0	54.5	38.8	29.8
	50 - 64 years	21.8	30.2	13.4	34.0	8.5	24.0	14.5	32.7	17.0
	65 and more	0.7	0.7	0.7	0.0	2.1	0.0	0.0	2.0	0.0
A4	Education									
	primary school	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	high school	26.6	20.1	33.1	22.0	13.0	12.0	47.3	26.5	36.2
	university	51.9	54.4	49.3	18.0	45.7	80.0	52.7	65.3	48.9
	masters / PhD	21.5	25.5	17.6	60.0	41.3	8.0	0.0	8.2	14.9
A5	Legal status									
	Sole proprietor	9.3	8.7	10.0	20.0	12.5	0.0	7.3	6.0	10.6
	Private limited	71.7	64.7	78.7	60.0	83.3	70.0	81.8	64.0	70.2
	Public limited	4.7	6.7	2.7	16.0	2.1	2.0	0.0	2.0	6.4
	Partnership	4.7	5.3	4.0	0.0	2.1	4.0	3.6	12.0	6.4
	Other	9.3	14.7	4.0	4.0	0.0	24.0	5.5	16.0	6.4
A6	Years in operation									
	under 6 months	1.3	0.0	2.6	0.0	2.0	0.0	3.6	0.0	2.1
	6 mth to 2 years	9.3	6.7	11.9	6.0	12.2	4.0	10.9	10.0	12.8
	2-5 years	19.9	16.0	23.8	8.0	36.7	26.0	14.5	14.0	21.3
	6-10 years	26.9	26.7	27.2	26.0	16.3	32.0	38.2	22.0	25.5
	more than 10 years	42.5	50.7	34.4	60.0	32.7	38.0	32.7	54.0	38.3
A7	Size									
	Micro (1-9)	34.1	29.1	39.1	18.0	34.7	35.4	36.4	34.0	46.8
	Small (10-49)	42.5	41.2	43.7	50.0	42.9	39.6	47.3	34.0	40.4
	Medium (50-249)	19.1	23.6	14.6	28.0	22.4	22.9	12.7	20.0	8.5
	Large (> 249)	4.3	6.1	2.6	4.0	0.0	2.1	3.6	12.0	4.3
A8	Economic sector									
	Agriculture	8.0	10.7	5.3	0.0	2.0	14.3	9.1	18.0	8.3
	Manufacturing	47.0	49.7	43.7	56.0	53.1	50.6	50.9	62.0	50.5
	Trade	9.7	6.7	12.6	8.0	8.2	8.2	14.5	4.0	10.9
	Services	35.3	32.9	39.4	36.0	36.7	26.9	25.5	16.0	20.3
A11	Cooperation									
	Consortium	10.3	15.4	5.3	24.0	10.2	18.0	3.6	4.1	2.1
	Business Alliance	5.3	4.7	6.0	4.0	2.0	4.0	1.8	6.1	14.9
	Network	13.0	10.7	15.2	14.0	2.0	18.0	30.9	0.0	10.6
	None	66.3	59.1	73.5	40.0	87.8	58.0	65.5	79.6	68.1

The frequencies for all questions under section A have been analysed based on the following categories:

- All SMEs in all three countries (both cluster members and non-members)
- Cluster members vs. non-members
  - Cluster members vs. non-members in all three countries
  - Cluster members vs. non-members by country
- Comparison between countries
  - Comparison of all SMEs (both cluster members and non-members) between countries
  - Comparison of cluster members between countries
  - Comparison of non-members between countries

5.1.1 All SMEs in all three countries (both cluster members and non-members)

The analysis of the frequencies from all of the surveyed SMEs (regardless if they are cluster members or not) shows that most of the interviewed representatives of the companies (83.4%) were either owners or had managerial positions, which means that the interviews have been held with the most informed persons in the selected companies. More than two thirds of the interviewed representatives of the companies were males and around 80 % of interviewees were less than 49 years of age. All of the interviewed representatives of the companies in all three countries, both cluster members and non-members, have at least finished high school, and around three fourths have at least university degree. More than two third of the selected companies are registered as private limited enterprises (71.7%) and there is no significant difference in the legal structure between cluster members and non-members and between the countries as well. Some of the companies, mainly representatives of the automotive sector in Serbia under the "other", specified that they are joint stock companies. Most of the interviewed companies have been older than 2 years (90%) and more than two thirds are micro or small with less than 50 employees (76.6%). This percentage is highly dependent on the industry structure

of the interviewed companies. For example companies from the automotive or textile sector have more employees than representatives of flower cluster which predominantly consists of individual farmers.

Almost half of the surveyed companies are from the manufacturing sector. Because high percentage of the interviewed companies classified themselves under category of "other" additional telephone interviews were conducted with all of them. Most of the companies that ticked "other" come from the ICT industry. The additional telephone interviews showed they choose the option "other", since they could not decide under which category to register. Taking this into consideration the Table 5.2 presents the structure of the interviewed companies based on the economic sector they operate in:

Table 5.2 Structure of the cluster members in all three countries

Type of clusters	Cluster members in all countries (%)
IT	24.0
Tourism	18.3
Furniture	16.7
metal/plastic processing (automotive components, agricultural equipment, plastic)	14.8
Textile	9.7
agriculture (honey, cheese, flowers)	7.1
Wine	4.8
Other	4.3

Almost three quarters from the cluster members of all three countries (73.8%) belong to four industries (IT, tourism, furniture and metal and plastic processing) and more than 95% are represented in seven clusters. The majority of interviewed companies (two thirds), regardless if they are cluster members or not are not involved in any kind of institutionalized cooperation, which is an indicator of low cooperation culture in all of the analysed countries.

5.1.2 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

From the summarized Table 5.1 it is evident that there is minimal, if any, difference between the cluster members and non-members regarding the structure of the position of the interviewed persons. In the sample of interviewed companies the cluster members are more educated than their non-member colleagues - 80% have at least university education, compared to 67 % of the non-members. However the sample is not that big for making a conclusion that the level of education influences the decision the company to become cluster member or not.

As it was expected, none of the cluster members was new enterprise (under 6 months) when the survey was conducted, which indicates that SMEs are not involved into cluster process in the first months after being founded, most probably because before entering into interdependent cluster relationships or creating any kind of partnerships, the SMEs need to tackle their individual challenges in the process of creating stable organization.
More than a half of the cluster members are older than 10 years compared to only one third among the non-members. In addition more than three fourths (77.4 %) of cluster members are older than 5 years, while their contribution among the non-members is 61.6% only. One conclusion that can be derived is that more mature companies enter more easily into cluster processes, which might be result of a fact that they have realised that working together with others might help them to become more competitive. However this hypothesis could be tested under a separate research. Although in most cases in SEE countries clusters are formed mainly by SMEs, large companies with more than 249 employees play key role in certain sectors, which were covered with this research, such as for example production of automotive components.

According to the percentage of the companies that have been involved in the institutionalized business cooperation, the cluster members tend to cooperate more with others. 44.9 % of the cluster members have been involved in the some kind of institutionalized business cooperation, compared to 30.5% non-members. It might be a product of higher level of trust between the cluster members or result of developing better cooperation culture based on positive cluster experience. However, if they cooperate more

as a result of being a cluster members or they have decided to become a cluster members because they have better cooperation culture, should be part of a separate research.

Cluster members vs. non-members by country

Bulgaria

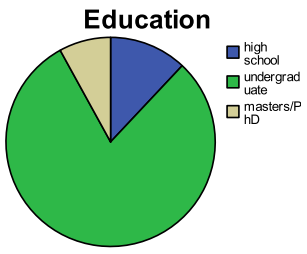
In Bulgaria, 60% of the cluster members are operating for more than 10 years, while only 32% of the non-members have such a long history. Based on the number of companies that are involved in different types of institutionalized cooperation (66%), it can be concluded that in Bulgaria cluster members have better cooperation culture than compared to non-members (only 16.2%).

Republic of Macedonia (FYROM)

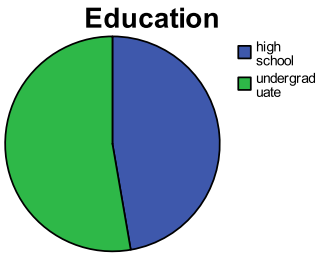
In the Republic of Macedonia (FYROM) the interviewed cluster members are more educated than the non-members. Almost 90 % have at least university diploma, compared to only half of the non-members. In addition none of the non-members possess master or PhD degree. (See Figure 5.1)

Figure 5.1 Education level of the cluster members and non-members in FYROM

Cluster members



Non-members



More than half of the surveyed non-members are in the manufacturing sector, while their contribution among the cluster members is 30.6 %. According to the additional interviews with the cluster members, it was realized that the high percentage of cluster members who ticked “other”, thought that their sector has not been mentioned in the questionnaire.

Although regarding the cooperative behaviour the difference between the cluster members and non-members in Republic of Macedonia (FYROM) is not that dramatic as in Bulgaria (44% vs. 36.3%), still the same conclusion can be made like in Bulgaria that the cluster members tend easier to enter into cooperative relations with other companies.

Serbia

From the summarised answers about the differences between cluster members and non-members in Serbia it can be noticed that more than half of the interviewed non-members are female, while they represent only one fifth among the cluster members. However based on this only, it cannot be concluded that there is a certain pattern behind this or it is just a coincidence.

The number of large companies that are cluster members in Serbia is higher compared to other countries. That might be a result of the types of the clusters that have been analysed (there are more large companies in the automotive sector for example, which is one of the clusters in Serbia). There is also a difference between the structure of cluster members and non-members in Serbia.

Regarding the cooperative behaviour of surveyed enterprises, in Serbia there is separate tendency than in Republic of Macedonia (FYROM) and Bulgaria, that shows that companies that are outside of clusters participate more in other forms of institutionalized cooperation, such as consortiums, business alliances, business networks, associations, etc. Their percentage is 38.2% against 24.5% of the cluster members. A possible reason for this might be that since they are involved in other forms of business cooperation, they do not see a need for participating in clusters or maybe they are not familiar with cluster concept.

5.1.3 Comparison between countries

The frequencies for the question under section A are presented in the table 5.3. After comparing the cluster members and non-members in all of the selected countries, comparison of both groups, has been made on country level.

Table 5.3 Frequencies for the questions under section A – comparison between countries

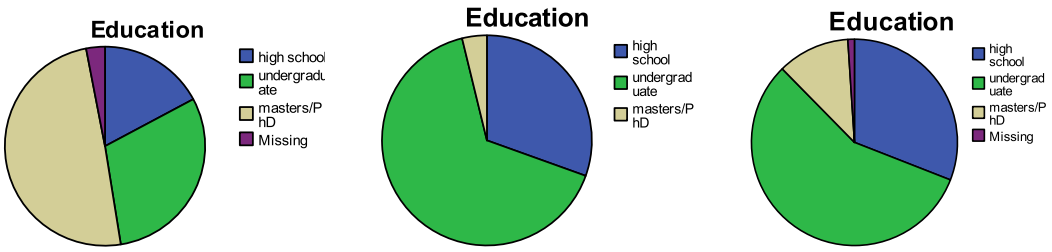
		Comparison between countries (all SMEs)			Comparison between countries (cluster members)			Comparison between countries (non- members)		
		Bulgaria (%)	**FYROM (%)**	**Serbia (%)**	**Bulgaria (%)**	**FYROM (%)**	**Serbia (%)**	**Bulgaria (%)**	**FYROM (%)**	**Serbia (%)**
A1	Position in the company									
	Owner and general manager	43.4	59.0	58.8	58.0	58.0	70.0	28.6	67.3	46.8
	Manager	34.3	29.5	24.7	26.0	38.0	12.0	42.9	21.8	38.3
	Other	22.2	11.4	16.5	16.0	12.0	18.0	28.6	10.9	14.9
A2	Gender									
	Male	69.7	79.0	63.9	68.0	82.0	80.0	71.4	76.4	46.8
	Female	30.3	21.0	36.1	32.0	18.0	20.0	28.6	23.6	53.2
A3	Age									
	20 - 34 years	26.8	24.8	39.6	16.0	18.0	26.5	38.3	30.9	53,2
	35 - 49 years	50.5	56.2	34.4	50.0	58.0	38.8	51.1	54.5	29,8
	50 - 64 years	21.6	19.0	25.0	34.0	24.0	32.7	8.5	14.5	17.0
	65 and more	1.0	0.0	1.0	0.0	0.0	2.0	2.1	0.0	0.0
A4	Level of education									
	primary school	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	high school	17.7	30.5	31.3	22.0	12.0	26.5	13.0	47.3	36.2
	university	31.3	65.7	57.3	18.0	80.0	65.3	45.7	52.7	48.9
	masters / PhD	51.0	3.8	11.5	60.0	8.0	8.2	41.3	0.0	14.9
A5	Legal status of the enterprise									
	Sole proprietor	16.3	3.8	8.2	20.0	0.0	6.0	12.5	7.3	10.6
	Private limited enterprise	71.4	76.2	67.0	60.0	70.0	64.0	83.3	81.8	70.2
	Public limited enterprise	9.2	1.0	4.1	16.0	2.0	2.0	2.1	3.6	6.4
	Partnership (other firms have a holding at least 25%)	1.0	3.8	9.3	0.0	4.0	12.0	2.1	5.5	6.4
	Other	2.0	14.3	11.3	4.0	24.0	16.0	0.0	1.8	6.4
	Don't know	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
A6	Years of operation									
	new enterprise (under 6 mth)	1.0	1.9	1.0	0.0	0.0	0.0	2.0	3.6	2.1
	6 months to 2 years	9.1	7.6	11.3	6.0	4.0	10.0	12.2	10.9	12.8
	2-5 years	22.2	20.0	17.5	8.0	26.0	14.0	36.7	14.5	21.3
	6-10 years	21.2	35.2	23.7	26.0	32,0	22.0	16.3	38.2	25.5
	more than 10 years	46.5	35.2	46.4	60.0	38.0	54.0	32.7	32.7	38.3
A7	Size of the enterprise									
	Micro (1-9 employees)	26.3	35.9	40.2	18.0	35.4	34.0	34.7	36.4	46.8
	Small (10-49 employees)	46.5	43.7	37.1	50.0	39.6	34.0	42.9	47.3	40.4
	Medium (50-249 employees)	25.3	17.5	14.4	28.0	22.9	20.0	22.4	12.7	8.5
	Large (> 249 employees)	2.0	2.9	8.2	4.0	2.1	12.0	0.0	3.6	4.3
A8	Economic sector									
	Agriculture	1.0	11.5	11.3	0.0	14.3	18.0	2.0	9.1	8.3
	Manufacturing	58.5	41.3	49.3	56.0	50.6	62.0	53.1	50.9	50.5
	Trade	8.1	11.5	9.3	8.0	8.2	4.0	8.2	14.5	10.9
	Services	12.3	35.6	30.8	36.0	26.9	16.0	36.7	25.5	20.3
A11	Cooperative behaviour									
	Consortium	17.2	10.5	3.1	24.0	18.0	4.1	10.2	3.6	2.1
	Business Alliance	3.0	2.9	10.4	4.0	4.0	6.1	2.0	1.8	14.9
	Network	8.1	24.8	5.2	14.0	18.0	0.0	2.0	30.9	10.6
	Other	13.1	1.9	12.5	24.0	4.0	14.3	2.0	0.0	10.6
	None	63.6	61.9	74.0	40.0	58.0	79.6	87.8	65.5	68.1

Comparison of all SMEs between countries

The summarised Table 5.3 shows that in all of the selected countries dominate part of the interviewed are male. However, while in Bulgaria in Serbia, the ratio of man against women is around 2:1; in Republic of Macedonia (FYROM) it is 4:1. Regarding the age structure there is no significant difference between the interviewed representatives of companies in different countries. There is significant difference between the levels of education of the interviewed persons between the countries. The most educated representatives of companies are in Bulgaria, where only 17.7 % are with high school only, which is almost two times less than Republic of Macedonia (FYROM) (30.5%) and Serbia (31.3 %). In addition more than a half possess master or PhD degree, while in Republic of Macedonia (FYROM), their contribution is only 3.8%. (See Figure 5.2)

Figure 5.2 Level of education between the countries (all SMEs)

Bulgaria FYROM Serbia



In Republic of Macedonia (FYROM) only 3.8 % of the interviewed companies have been registered as sole proprietorships, which is five times less than in Bulgaria and almost three times less than in Serbia. Regarding the companies' structure in Republic of Macedonia (FYROM) the number of the surveyed companies from the agriculture sector is higher than in Serbia, while, in Serbia there are more representatives from hotels and restaurants compared to Republic of Macedonia (FYROM) and Bulgaria, because of the tourism cluster. There is no big difference among the countries regarding the rest of the economic structure of the analysed companies.

There is no big difference between the companies in the three selected countries, regarding their cooperative behaviour, especially between Bulgaria and Republic of

Macedonia (FYROM) (41.4% and 40.1%). In Serbia, however, the number of companies that are involved in different forms of business cooperation is lower than in the previous two countries (31.2%)

Comparison of cluster members between countries

From the summarised responses from the cluster members from each of the countries it is evident that the contribution of cluster members in Bulgaria with master/PhD degree is impressive 60%, which is well above the percentage in Republic of Macedonia (FYROM) and Serbia (more than six times). The difference between the cluster members registered as sole proprietors in Republic of Macedonia (FYROM) and Bulgaria is particularly evident. While in Bulgaria sole proprietors represent one fifth among the cluster members in Republic of Macedonia (FYROM) there is no single interviewed company registered as a sole proprietor. There is also a difference between the age structures of the cluster members between the countries. The percentage of cluster members in Serbia (54%) and especially Bulgaria (60%), which are under operation for more than 10 years, is significantly higher than compared to Republic of Macedonia (FYROM) (38%).

The percentage of large companies that are cluster members in Serbia is higher than in Bulgaria and Republic of Macedonia (FYROM) because of the representatives of the Serbian automotive cluster AC Serbia, where large companies play important role. Between Serbia and Republic of Macedonia (FYROM) there is no difference of the structure of cluster members, but in Bulgaria the structure is different. While the percentage of cluster members in service industries is higher than the one in Republic of Macedonia (FYROM) and Serbia, there is no single company from agriculture sector (In FYROM – 14.3% and in Serbia – 18.0%)

The cluster members in Serbia are more reluctant to enter into formalized cooperation relations with other companies, compared to their colleagues from Republic of Macedonia (FYROM) and Bulgaria. Almost four fifth (79.6 %) of them do not participate in any of the mentions business cooperation relations. Since significant number of companies, especially in Bulgaria answered that they have been involved in other forms of cooperation, although without specifying, additional telephone interviews were held,

which showed that they consider membership in business association as separate form of cooperation which has not been mentioned.

Regarding the types of the particular clusters within a given industries the Table 5.3 shows comparison between the structure of the surveyed cluster members. From the summarized Table 5.3 it can be concluded that in spite of the intention to compare similar clusters, there is a significant difference between the structures of the cluster members in the selected countries, because the cluster emerged in different industries, due to different reasons. Even in cases where there are similar clusters, the number of the surveyed companies is not the same because of different size of the clusters and the imbalance put on them by national governments. Most of the cluster members in Republic of Macedonia (FYROM) (94.5%) belong to four clusters only (IT – 37.5%, wine – 29.2 %, tourism – 14.6 % and textile – 12.5%). In Bulgaria 85.4% of the cluster members belong to five clusters (tourism – 27.1 %, furniture – 25 %, media and press – 14.6 %, textile – 10.4% and IT – 8.3%), while In Serbia all of the cluster members are representing six clusters. This research, however, aims at exploring the behaviour of cluster members compared to non-members regardless of economic sectors they are representing. IT and furniture are the only in two sectors where there are cluster members in all of the selected countries. In tourism and textile there are clusters in Bulgaria and Republic of Macedonia (FYROM) and in agriculture equipment in Bulgaria and Serbia. It should be noted that it was difficult to determine exact number of the companies which belong to the agriculture sector, because some of the companies from wine sectors, especially in the Republic of Macedonia (FYROM) classified themselves as agricultural, since they also produce grapes, while the others stated that they belong to the manufacturing sector as a processors of grapes. Also in Bulgaria the honey producers consider themselves as representatives of the processing industry and not as primary producers of honey.

Comparison of non- members between countries

Regarding the cooperative behaviour in all of the selected countries the majority of interviewed non-members have not been involved in any type of formalized business cooperation, but this percentage in Bulgaria is highest (almost 90 %). In Bulgaria the most popular form of business cooperation is consortium. Above 10% of the surveyed

non-members have been involved in some type of consortium, which is much higher than in Republic of Macedonia (FYROM) (3.6%) and Serbia (2.1%). In Republic of Macedonia (FYROM) almost one third of the non-members, have participated in a network type of cooperation, while in Serbia and Bulgaria only 10.6% and 2% respectively. Whether that is result of preference of non-members, or because of differences in the levels of formalities within the networks, between the countries, could be topic of a separate research. In Serbia 15% of surveyed non-members, enter into cooperative relations through business alliances, which is higher percentage than in Bulgaria (2%) and Republic of Macedonia (FYROM) (1.8%)

5.2 Regression analysis, section A - general information

The results from the regression analysis of the questions from the section A are presented in the summary Table 5.4.

Table 5.4 Regression analysis – section A, general information

	Cluster members vs. non-members			
Questions	**Overall**	**Bulgaria**	**FYROM**	**Serbia**
Section A				
Question A2	.012	-.009	-.005	.110
Question A3	.060	0.81	.019	.070
Question A4	.020	-.006	.164	-.010
Question A5	.028	.000	.053	0.22
Question A6	.037	.113	-.001	.015
Question A7	.021	.029	-.007	.036
Question A8	-.003	-.010	.069	.138
Section B				

Keys: *The closer adjusted R-square is to 1.0 the better can one variable be predicted by the other. The closer is to 0.0, it cannot be predicted if a company is cluster member or not.

Based on the adjusted R-square values from all questions, presented in Table 5.4, similar findings have been demonstrated for companies from all three countries and for each country individually.

Cluster members vs. non-members in all of the countries

When regression analysis is applied to companies from all of the countries together, it can be concluded that the for the first section of questions, which covers general information, the values of adjusted R-square are the lowest, which means that it is not possible to predict if a companies are cluster members or not based on their gender, age, education, legal status, size and years of operation.

Cluster members vs. non-members by country

Bulgaria

In Bulgaria there is almost no differences between the responses from both groups of companies. All of the values of adjusted R-square in the section A are very close to zero, which does not provide enough justification for predicting the dependant variable, based upon the independent ones.

Republic of Macedonia (FYROM)

The highest values of adjusted R-square in Republic of Macedonia (FYROM) is for the question A4 (.164), related to the level of education, but the value is still very close to zero, so even for this question it could not be predicted if a company is cluster members or not. The responses of the rest of the questions from section A between the cluster members and non-members are even more similar.

Serbia

Both groups of companies in Serbia have also provided very similar responses to all questions from the section A.

The highest values of adjusted R-square are for the question A2 (.110), related to gender and A8 (.138) which provides information on economic sector of the surveyed company,

but similarly to the other analysed countries, it could not be predicted if a company is cluster members or not, based on the given responses.

Based on the adjusted R-square values from all questions of the section A related to general information, a final conclusion can be derived that it is not possible to predict if a company is cluster member or not, based on the value of the independent variables covered with the survey. This conclusion counts for all of the countries together and for each of them separately.

Chapter 6

6. Survey data analysis – Clusters, preconditions and barriers

This chapter looks at analysis of the questions B - Clusters, preconditions and barriers. One-way analysis of variance (ANOVA) was used, according to the following structure:

- Cluster members vs. non-members in all three countries
- Cluster members vs. non-members by country
- Comparison of both cluster members and non-members between countries
- Comparison of cluster members between countries
- Comparison of non-members between countries

When filling the questionnaire, the cluster members were providing answers of the questions from their own experience, while in certain cases the non-members could express their opinion only based on their understanding and familiarity with the cluster concept. For assessing the understanding about the cluster development all of the surveyed companies have been asked to define a cluster (question B1 – "How would you define cluster"). As it was assumed all of the cluster members provided a correct definition that was close to the definitions from the literature review, but from non-members only companies that provided definition that showed that they have at least basic understanding about what clusters are, were included in the survey. However, although the aim of comparison is to show if there is a certain pattern behind the perceptions of cluster members to non-members, this limitation of not having the same knowledge about clusters, needs to be taken in consideration when comparing both groups.

The results of ANOVA analysis are presented in a summarized table for each of the questions. Additionally factor analysis has been conducted for the questions with more than two alternatives. It was conducted for all countries, as well as for each of the selected

countries separately, but will be presented in Appendix only (Appendix C), since it does not directly contribute to answering research questions.

6.1. Preconditions for cluster formation

The question B3 is about the preconditions or factors for cluster development. The surveyed companies were asked to rate the importance of the following factors for cluster development:

- Critical mass of SMEs in the same sector
- Geographical proximity of members
- Entrepreneurial culture in the region
- Culture of cooperation
- Level of trust
- Government support
- Business climate

Those alternatives were developed as a result of both, literature review and telephone interviews with surveyed companies, which were conducted prior to designing of the questionnaire.

6.1.1 One way ANOVA Question B3

According to Table 6.1, the surveyed companies rate the cooperation, trust, business climate and governmental support as important preconditions for cluster formation. They pointed out that the existence of trust among the companies is the most important factor, while they consider the critical mass of SMEs and geographical proximity as the least important factors. In general they confirm the findings from the literature that certain preconditions are supposed to be in place for successful establishment of cluster initiatives.

Table 6.1 QB3 - Preconditions for cluster development – cluster members vs. non-members

Mean scores cluster vs. non-members in all three countries				
B3. Please indicate the importance of the following factors in cluster formation within your region	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
There is a critical mass of SMEs in the same sector	3.50	3.74	3.20	0.000*
There is geographical proximity of members	3.36	3.58	3.10	0.001*
There is an entrepreneurial culture in the region	3.65	3.75	3.53	0.087**
There is appropriate culture of cooperation	3.83	4.06	3.55	0.000*
There is sufficient level of trust	3.90	3.96	3.83	0.310
There is a governmental support	3.66	3.75	3.56	0.193
There is appropriate business climate	3.89	3.99	3.77	0.054**

Keys: * $\alpha < 0.05$ statistically significant difference ** $0.05 \leq \alpha \leq 0.1$ marginal difference

6.1.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

When filling the questionnaire, the cluster members could answer the questions from their own experience, while the non-members could provide only their perception based on their understanding and familiarity with the cluster concept.

Although, when discussing about preconditions for cluster development, the cluster members were providing answers from their own experience, while the non-members could express their opinion based on their understanding and familiarity with the cluster concept only, it was evident that there are slight differences in perceptions of both groups. The cluster members rate all the factors for creating clusters as more important than non-members. All of the mean scores are higher compared to the mean scores of companies that are not cluster members, but this difference is specifically noticeable regarding:

- Critical mass of SMEs in the same sector (0.000);
- Appropriate culture of cooperation (0.000);
- Geographical proximity of members (0.001);
- Appropriate business climate (0.054);
- Entrepreneurial culture in the region (0.087);

They rate all of the factors as important, while the non-members consider the critical number of SMEs and geographical concentration as neither important nor not important. The cluster members rated the culture of cooperation highest, while the non-members consider the trust as a most important precondition for cluster development. There is almost no difference in how both groups perceive the importance of trust for the formation of clusters. They assess it as an important factor for cluster development.

Cluster members vs. non-members by country

Table 6.2 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
B3 Please indicate the importance of the following factors in cluster formation within your region	**Bulgaria**				**FYROM**				**Serbia**			
	Overall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Overall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Overall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
There is a critical mass of SMEs	3.24	3.45	2.89	0.089**	3.64	3.81	3.46	0.072**	3.57	3.96	3.14	0.000*
There is geographical proximity	3.30	3.39	3.17	0.454	3.48	3.79	3.17	0.002*	3.29	3.56	3.00	0.013*
There is an entrepreneurial culture	3.70	3.63	3.82	0.447	3.67	3.91	3.43	0.022*	3.60	3.72	3.47	0.252
There is a culture of cooperation	4.09	4.26	3.80	0.053**	3.78	4.02	3.53	0.028*	3.66	3.90	3.41	0.016*
There is sufficient level of trust	4.04	4.16	3.83	0.184	3.80	3.87	3.72	0.516	3.89	3.84	3.93	0.628
There is a gov. support	3.39	3.41	3.37	0.894	3.56	3.68	3.45	0.327	3.98	4.14	3.81	0.066**

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

When analysing the situation in each country separately, the same observation can be made for all of them with an exception of Bulgaria, where the entrepreneurial culture, as a precondition for creation of clusters is rated higher by the companies which do not belong to any cluster, and Serbia where non cluster members rate the level of trust as more important than cluster members. However, the differences are not significant, for some conclusions about certain patterns to be made.

In Bulgaria the significant differences appear in the following cases, where cluster members rate the suggested preconditions higher than the non-members:
- Appropriate culture of cooperation (0.053);
- Critical mass of SMEs in the same sector (0.089);

Republic of Macedonia (FYROM)
- Geographical proximity of members (0.002);
- Entrepreneurial culture in the region (0.022);
- Appropriate culture of cooperation (0.028);
- Critical mass of SMEs in the same sector (0.072);

The cooperation culture have been also ranked highest by the cluster members in Republic of Macedonia (FYROM), but the biggest difference between the cluster members and non-members is in the perception about the importance of the geographical proximity of the companies. The cluster members think that geographical proximity maters and create some additional benefits.

Serbia
- Critical mass of SMEs in the same sector (0.000);
- Geographical proximity of members (0.013);
- Appropriate culture of cooperation (0.016);
- Appropriate business climate (0.049);
- Governmental support (0.066)

In Serbia the cluster members think that the governmental support is the most important precondition for cluster development. The most evident difference between the cluster members and non-members is regarding the critical mass of SMEs in the same sector.

6.1.1.2 Comparisons between countries (ANOVA country)

Results of the question B3 related to comparison between the countries has been presented in the table 6.3.

Table 6.3 Comparison between countries

B3 Please indicate the importance of the following factors in cluster formation within your region	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM
There is a critical mass of SMEs	0.057**	0.061**	/	/	0.080**	/	0.072**	/	0.070**	0.064**	/	/
There is geographical proximity	0.420	/	/	/	0.221	/	/	/	0.689	/	/	/
There is an entrepreneurial culture	0.798	/	/	/	0.372	/	/	/	0.283	/	/	/
There is a culture of cooperation	0.022*	/	0.019*	/	0.151	/	/	/	0.315	/	/	/
There is sufficient level of trust	0.316	/	/	/	0.241	/	/	/	0.621	/	/	/
There is a gov. support	0.002*	/	0.002*	0.030*	0.005*	/	0.004*	/	0.167	/	/	/
There is appropriate business climate	0.489	/	/	/	0.266	/	/	/	0.842	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

When the perception of SMEs has been compared country wise (regardless if they are cluster members or not) significant differences appear in the following cases:

- Critical mass of SMEs in the same sector (0.057);
- Appropriate culture of cooperation (0.022);
- Governmental support (0.002)

For the variable critical mass of SMEs in certain sector, the post hoc analysis indicates that there is a difference between Bulgaria and Republic of Macedonia (FYROM). The companies in Republic of Macedonia (FYROM) rate this factor as more important than the companies in Bulgaria.

There is also a significant difference between Bulgaria and Serbia regarding the cooperation culture as a precondition for formation of clusters. In Bulgaria the surveyed

companies rate the existence of cooperation culture as much more important than their counterparts in Serbia.

Regarding the importance of Governmental support perception of the companies in Serbia differs from the one in Bulgaria in Republic of Macedonia (FYROM). They consider this factor as more important than compared to companies in other two countries.

Comparisons of cluster members between countries

When the perception of cluster members have been compared country wise significant differences appear in the following cases:

- Critical mass of SMEs in the same sector (0.080)
- Governmental support (0.005)

In such cases, when there was a significant difference across the variables between the countries post hoc analysis was used. Based on the post hoc analysis it can be concluded that there is a difference between Bulgaria and Serbia. The cluster members in Serbia rate this factor as more important than the cluster members in Bulgaria. Regarding the importance of Governmental support perception of the cluster members in Serbia differs from the one in Bulgaria. They consider this factor as more important than compared to cluster members in Bulgaria.

Comparisons of non-members between countries

When the perception of non-members has been compared country wise significant differences appear only in the case of the critical mass of SMEs in the same sector (0.064). The post hoc analysis indicates that there is a difference between Bulgaria and Republic of Macedonia (FYROM). The non-members in Republic of Macedonia (FYROM) rate this factor as more important than the non-members in Bulgaria, which might be a result of the smaller size of the country, where the number of companies by sector is much smaller than in Bulgaria.

6.2 Barriers for cluster formation

The question B4 is about the barriers for cluster formation and the surveyed companies were asked to choose between the following alternatives:

- Lack of awareness about
- Lack of cooperation and trust between the stakeholders clusters
- Inappropriate legal framework
- Small market does not allow companies to focus on core competencies
- Inappropriate cluster support policy

Those alternatives are derived from both, literature review and telephone interviews, which were conducted prior to designing of the questionnaire. The interviewees were given opportunity to add eventually some other barriers which were not mentioned in the literature.

6.2.1 One way ANOVA Question B4

According to the mean scores in Table 6.4 all of the stated barriers are important, except for the size of the market, which is neither important nor not important (3.22). The most significant barriers for cluster formation in all three countries are lack of awareness about clusters and lack of cooperation and trust. On a scale between one and five, both of them were marked slightly above four, which means important. Lack of awareness was ranked highest among the barriers, followed by the lack of cooperation and trust, which are also described by the literature.

Table 6.4 QB4 Barriers for cluster formation - cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
B4 Please indicate the importance of the following barriers for cluster formation within your region	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Lack of awareness about clusters	4.10	4.15	4.05	0.401

Lack of cooperation and trust	4.04	4.10	3.98	0.339
Inappropriate legal framework	3.68	3.73	3.62	0.388
Small markets (not easy to specialize)	3.22	3.19	3.24	0.721
Inappropriate cluster support policy	3.70	3.74	3.65	0.431

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

6.2.1.1 Cluster members vs. non-members

When discussing about the barriers for cluster formation, the cluster members were providing answers from their own experience, while in some cases, such as cluster policy, the non-members could express their opinion only based on the information they possess in that moment. In spite of this limitation, the goal was differences in perceptions between the two groups to be examined.

Cluster members vs. non-members in all three countries

When comparing the cluster members and non-members, in all three countries the cluster members rate all barriers for cluster formation, except one as more important than non-members. The only barrier that is rated higher by non-members than cluster members is the small size of the market which negatively influences specialization. All of the mean scores of the rest of the offered options are higher compared to the mean scores of companies that are not cluster members. For the cluster members lack of cooperation and trust is the most important barrier, while for the non-members lack of awareness about the cluster concept is the most important factor that prevents companies to organize themselves in clusters. However it should be noted that this difference is not significant, which means that cluster members and non-members share the same view regarding the barriers for setting up clusters.

Cluster members vs. non-members by country

Table 6.5 Cluster members vs. non-members by country

	Mean scores cluster members vs. non-members by country		
B4	**Bulgaria**	**FYROM**	**Serbia**

Please indicate the importance of the following barriers for cluster formation	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
Lack of awareness	4.25	4.31	4.16	0.523	4.02	4.04	4.00	0.853	4.06	4.10	4.02	0.682
Lack of cooperation and trust	4.19	4.04	4.41	0.136	3.98	4.06	3.91	0.450	3.99	4.18	3.78	0.010*
Inappropriate legal framework	3.57	3.58	3.55	0.895	3.82	3.72	3.90	0.321	3.62	3.88	3.35	0.009*
Small markets	2.86	2.58	3.29	0.017*	3.55	3.68	3.43	0.263	3.17	3.33	3.00	0.103
Inappropriate cluster policy	3.69	3.67	3.73	0.767	3.84	3.83	3.85	0.917	3.55	3.73	3.36	0.079**

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

When countries are analysed, there is significant difference between cluster and non-members only in the following cases:

Bulgaria

- Small markets (0.017);

Cluster members consider the size of the market as less important barrier compared to the companies that are not cluster members. While the non-members are to a certain extent indifferent regarding this factor as a barrier for cluster development, cluster members consider it as non-important.

In Bulgaria non-members perceive lack of cooperation and trust (4.41) and inappropriate cluster policy as more important barriers, which might be a reason why they have not decided to join cluster initiatives. Regarding the inappropriate legal framework as a barrier for cluster formation, there is almost no difference in perception between the members and non-members. Cluster members in Bulgaria think that lack of awareness about clusters is big barrier for creation of clusters.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) there is no significant difference between the cluster members and non-members about their perception about barriers for cluster development. Both groups consider lack of awareness and lack of trust and cooperation as main barriers.

Serbia

- Inappropriate legal framework (0.009);
- Lack of cooperation and trust (0.010);
- Inappropriate cluster policy (0.079);

In Serbia all of the mentioned barriers were rated higher by cluster members than by non-members. The difference is especially evident in the case of the perception about the legal framework, lack of cooperation and trust and inadequate cluster support policy.

6.2.1.2 Comparisons between countries (ANOVA country)

Table 6.6 Comparison between countries

B4 Please indicate the importance of the following barriers for cluster formation within your region	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM
Lack of awareness about clusters	0.289	/	/	/	0.362	/	/	/	0.794	/	/	/
Lack of cooperation and trust	0.285	/	/	/	0.754	/	/	/	0.008*	0.034*	0.008*	/
Inappropriate legal framework	0.224	/	/	/	0.382	/	/	/	0.019*	/	/	0.015*
Small markets (not easy to specialize)	0.000*	0.000*	/	0.046*	0.000*	0.000*	/	0.007*	0.098**	/	/	0.083**
Inappropriate cluster support policy	0.101	/	/	/	0.737	/	/	/	0.012*	/	/	0.010*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

When there was a significant difference across the variables between the countries post hoc analysis was used and based on it, it can be concluded that in Bulgaria the awareness about clusters is on a lowest level, which is surprising having in mind the opportunities for support of clusters under the EU structural funds (OP Competitiveness). In addition

Bulgarian companies are considering lack of cooperation and trust as more important barrier, than their counterparts in Republic of Macedonia (FYROM) and Serbia.

Serbian companies are the most satisfied with the cluster support policy, since they rated that variable lower than companies in the rest of the two countries.

The most significant difference between the perception of companies in the three countries is regarding the variable "Small market does not allow companies to focus on core competencies". The post hoc analysis indicates that there is a difference between Republic of Macedonia (FYROM) and Bulgaria (0.000) and Republic of Macedonia (FYROM) and Serbia (0.046).

Comparisons of cluster members between countries

For the variable "Small market do not allow companies to focus on core competencies", the post hoc analysis indicates that there is a difference between cluster members in Republic of Macedonia (FYROM) and Bulgaria (0.000) and cluster members in Republic of Macedonia (FYROM) and Serbia (0.007). Cluster members in Republic of Macedonia (FYROM) consider this factor as much more important that the cluster members in Serbia and especially Bulgaria. This is in line with the previous assumption that this perception heavily depends on the size of the market.

Comparisons of non-members between countries

When the perception of non-members has been compared between the countries significant differences appear in the following cases:

- Cooperation and trust (0.008);
- Cluster support policy (0.012)
- Legal framework (0.019);
- Small size of the market (0.098)

The post hoc analysis shows that the non-members in Bulgaria think that this barrier is more important compared to non-members in Republic of Macedonia (FYROM) and Serbia. There is also difference between non-members in Republic of Macedonia

(FYROM) and Serbia. Non-members in Republic of Macedonia (FYROM) rate legal framework, small size of the market and the cluster support barrier as bigger barriers than non-members in Serbia.

6.3 Cooperation within a cluster

The question B4a was aimed at cluster members only, since it was focusing on internal linkages within a cluster. The purpose was to explore if the cluster members enter easier into cooperative relationship with other cluster members, than compared with companies that are outside of the cluster. The surveyed cluster members were given opportunity to express their opinion about the following statements:

- We have better relations with cluster members compared to the non-members
- We enter more easily into cooperation or joint activities with other cluster members than with non-members
- We enter into join marketing activities more easily with other cluster members than non-members

6.3.1 Mean scores Question B4a

6.3.1.1 Cluster members in all three countries and by country

The results to question B4a indicate that the cluster members in all three countries do not have better relations with other cluster members than with non-members. Their decision to enter into business relations with other companies do not depend if the company is cluster member or not.

Table 6.7 QB4a – Cooperation - Cluster members of all three countries and by country

B4a Please exp. your opinion on the following statements about your coop. with other	Mean scores cluster members in all	Mean scores cluster members by country			Comparison of cluster members between countries	
		Bulgaria	FYROM	Serbia	ANOVA Country	Post hoc analysis

cluster members after joining your cluster	three countries				(cluster members)	BG vs. RM	BG vs. Serbia	Serbia vs. RM
We have better relations with cluster members	3.36	3.26	3.37	3.46	0,666	/	/	/
We cooperate easier with cluster members	3.49	3.58	3.43	3.47	0,787	/	/	/
We have marketing activities easier with cluster members	3.40	3.48	3.39	3.34	0,834	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Cluster members by country

Bulgaria

In Bulgaria cluster members agree that they cooperate easier with cluster members than with non-members. This might be a result of the fact that most of the interviewed cluster members participated in the EU Phare Cluster Grant Scheme and Technical Assistance (so called Cluster II project), under which they were provided with significant financial support exclusively for implementing joint activities.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) there is almost no difference between the mean scores of the given variables. Cluster members, contrary to the literature review, do not have better relationship or are not willing easier to enter into joint activities with other cluster members, than compared to the non-members. This finding questions the hypothesis from the literature review from the industrialized countries that cluster positively influence cooperation between its members.

Serbia

Similar to Republic of Macedonia (FYROM), in Serbia there is almost no difference between the mean scores of the given variables. Cluster members, contrary to the literature review, do not have better relationship or are not willing easier to enter into joint activities with other cluster members, than compared to the non-members. Comparing to the literature review from industrialized countries (Beerpoot, 2004), this finding questions the hypothesis that cluster positively influence cooperation between its members.

Comparison of cluster members between countries

There is no significant difference in answers between the cluster members in the selected countries. Comparing the cluster literature for industrialized countries, this finding contradicts the importance of relationships based on trust and on the sustained reproduction of co-operation between intra-district agents (Camison, 2003).

6.4 Regression analysis, section B - clusters, preconditions and barriers

The results from the regression analysis of questions under section B (clusters, preconditions and barriers) are presented in the summary Table 6.8. Regression analysis has not been carried out for the question B4, because it was aimed for cluster members only.

Table 6.8 Regression analysis – section B, clusters, preconditions and barriers

	Cluster members vs. non-members			
Questions	**Overall**	**Bulgaria**	**FYROM**	**Serbia**
Section B				
Question B3	.084	.006	.056	.296
Question B4	-.011	.057	.000	.055

Keys: *The closer adjusted R-square is to 1.0 the better can one variable be predicted by the other. The closer is to 0.0, it cannot be predicted if a company is cluster member or not.

Based on the adjusted R-square values from all questions, presented in Table 6.8, similar findings have been demonstrated for companies from all three countries and for each country individually.

Cluster members vs. non-members in all of the countries

When regression analysis is applied to companies from all of the countries together, it can be concluded that the for the questions from the section B, which refer to the preconditions and barriers for cluster development, the values of adjusted R-square are low, which means that it is not possible to predict if a companies are cluster members or not based on their perception of these independent variables.

Cluster members vs. non-members by country

Bulgaria

In Bulgaria the value of adjusted R-square for both questions is very close to zero, which means the responses between the cluster members and non-members are very similar and therefore the dependant variable cannot be predicted, based upon the independent ones.

Republic of Macedonia (FYROM)

The same conclusion can be derived for the companies from Republic of Macedonia (FYROM), where also the companies from both groups demonstrate very small difference in responding the questions B3 and especially B4.

Serbia

The highest values of adjusted R-square are in Serbia for the question B3 (.296), related to preconditions for cluster development, but however, similarly to the other analysed countries, the values of adjusted R-square are closer to 0.0 than to 1.0, which means that the responses between the cluster members and non-members do not differ to that extent, that based on the responses, could be predicted if a company is cluster members or not.

Based on the adjusted R-square values from both questions of the section B, a final conclusion can be derived that it is not possible to predict if a company is cluster member or not, based on the value of the independent variables covered with the questions of this section. This conclusion counts for all of the countries together and for each of them separately.

Chapter 7

7. Survey data analysis - Clusters and competitiveness

This chapter will look at analysis of the questions C – Clusters and competitiveness. One-way analysis of variance (ANOVA) will be used, according to the following structure:

- Cluster members vs. non-members in all three countries
- Cluster members vs. non-members by country
- Comparison of both cluster members and non-members between countries
- Comparison of cluster members between countries
- Comparison of non-members between countries

The results will be presented in a summarized table for each of the questions. Additionally factor analysis has been conducted for the questions with more than two alternatives. It was conducted for all countries, as well as for each of the selected countries separately, but will be presented in Appendix only (Appendix C), since it does not directly contribute to answering research questions.

7.1 Cluster benefits

The question C1 aims at exploring if cluster members do perform better, as a result of participating in clusters, especially regarding their competence, efficiency, productivity, cost effectiveness, profitability and innovativeness. Direct comparison between cluster members and non-members cannot be made for this question.

7.1.1. Mean scores Question C1

7.1.1.1 Cluster members in all three countries and by country

The results of the question C1, related to cluster members in all of the selected countries and by country have been presented in the table 7.1.

Table 7.1 Cluster members in all three countries and by country

C1 As a result of (not) being a cluster member my company is more:	Mean scores cluster members in all three countries	Mean scores cluster members by country			Comparison of cluster members between countries			
		Bulgaria	FYROM	Serbia	ANOVA Country (cluster members)	Post hoc analysis		
						BG vs. RM	BG vs. Serbia	Serbia vs. RM
competent	3.46	3.51	3.50	3.36	0.779	/	/	/
efficient	3.28	3.24	3.34	3.26	0.889	/	/	/
productive	3.18	3.10	3.28	3.15	0.698	/	/	/
cost effective	3.08	2.90	3.14	3.22	0.262	/	/	/
profitable	3.16	3.04	3.26	3.18	0.584	/	/	/
innovative	3.41	3.36	3.40	3.47	0.881	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal difference

Cluster members in all three countries have not received additional benefits in terms of increasing their competence, efficiency, productivity, cost effectiveness, profitability and innovativeness as a result of being cluster members. They are neither more competitive as a result of being cluster members, nor more or less competitive as a result of not being cluster member. Being a cluster member or not does not influence their competitiveness.

The mean scores of the competence and innovativeness are the highest (3.46 and 3.41), which would might indicate that according to cluster members the clusters contribute more to increasing their competence and innovativeness than for other factors such as efficiency, productivity, profitability and cost effectiveness. However, all of them are in a category "neither disagree nor agree", which demonstrates that the cluster does not have any influence on the stated variables.

Cluster members by country

Bulgaria

In Bulgaria the lowest mean score was given to the cost effectiveness, while the highest to the competence. However, all of the mean scores are in the same category, which meaning that the stated variables do not depend on the fact that a company is cluster member or not.

Republic of Macedonia (FYROM)

There is almost no difference between the mean scores of the given variables. All of them are in a category "neither disagree nor agree", which indicates that according to the cluster members, the cluster does not have any influence on the stated variables.

Serbia

Same as in Republic of Macedonia (FYROM), there is almost no difference between the mean scores of the given variables. All of them are in a category "neither disagree nor agree", which implies that according to the cluster members, the cluster does not have any influence on the stated variables.

Comparisons of cluster members between countries

Cluster members in all of the countries have very similar positions, in how indifferent they are regarding the influence of clusters on their competence, efficiency, productivity, cost effectiveness, profitability and innovativeness.

7.1.1.2 Non-members in all three countries and by country

Table 7.2 Comparison of non-members between countries

C1 As a result of (not) being a cluster member my company is more:	**Mean scores non-members in all three countries**	**Mean scores non- members by country**			**Comparison of non-members between countries**			
		Bulgaria	**FYROM**	**Serbia**	**ANOVA Country (cluster members)**	**Post hoc analysis**		
						BG vs. RM	**BG vs. Serbia**	**Serbia vs. RM**
competent	2.77	2.87	2.31	3.22	0.000*	0.015*	/	0.000*
efficient	2.83	2.96	2.33	3.33	0.000*	0.002*	/	0.000*
productive	2.84	3.00	2.41	3.20	0.000*	0.003*	/	0.000*
cost effective	2.89	2.89	2.58	3.31	0.000*	/	0.068**	0.000*
profitable	2.84	2.83	2.38	3.43	0.000*	0.030*	0.004*	0.000*
innovative	2.70	2.66	2.34	3.20	0.000*	/	0.012*	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

There is, however, significant difference between the non-members regarding the benefits they receive as a result of not participating in clusters. While non-members in Bulgaria and Serbia in most cases neither agree nor disagree with the statement that they are more competent, efficient, productive, cost effective, profitable and innovative as a result of being outside clusters, the non-members in Republic of Macedonia (FYROM) have stronger position and demonstrate disagreement with the notion they are getting more benefits as a result of being outside of clusters.

7.2 Constraints for performance

For the question C2 the surveyed companies were asked to rate the influence of the following constraints for their business performance:

- Lack of skilled labour
- Access to finance
- Implementing new technology
- Implementing new forms of organization
- Quality management
- Administrative regulations
- Infrastructure (road, gas, electricity, communication etc.)

7.2.1 One way ANOVA Question C2

The Table 7.3 shows the mean scores of the cluster members vs. non-members in all of the selected countries. The results to question C2 indicate that for the surveyed companies, regardless if they are cluster members or not, most of the presented factors were indifferent as a constraint to their business performance. Only access to finance was indicated as an important constraint.

Table 7.3 QC2 – Constraints for performance – cluster members vs. non-members

Mean scores cluster vs. non-members in all three countries				
C2 To what extent the following factors have been constraints to your performance in the last 3 years	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Lack of skilled labour	3.30	3.48	3.12	0.016*
Access to finance	3.62	3.84	3.40	0.001*
Implementing new technology	3.26	3.37	3.14	0.086**
Implementing new forms of organization	2.99	3.10	2.88	0.083**
Quality management	3.09	3.20	2.98	0.096**
Administrative regulations	3.27	3.48	3.05	0.000*
Infrastructure (road, gas, electricity, communications)	3.14	3.29	2.98	0.027*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal difference

7.2.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

There is significant difference in perception between the cluster members and non-members about the influence of proposed factors as constraints to their performance. They all rate the proposed factors as bigger constraints to their business compared to the non-members, but the difference is especially evident in a case of administrative regulation, access to finance, lack of skilled labour and infrastructure.

Cluster members vs. non-members by country

Table 7.4 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
C2 To what extent the following factors were constraint to your performance	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
Lack of skilled labor	3.87	3.84	3.90	0.798	3.21	3.54	2.87	0.008*	2.82	3.04	2.59	0.056**
Access to finance	3.95	3.96	3.94	0.928	3.66	4.00	3.31	0.002*	3.25	3.56	2.93	0.005*
New technology	3.35	3.39	3.30	0.715	3.24	3.25	3.22	0.895	3.19	3.49	2.89	0.012*
New organization	2.95	3.10	2.80	0.217	3.04	3.24	2.84	0.047*	2.97	2.93	3.00	0.756
Quality management	3.28	3.37	3.18	0.441	2.94	3.13	2.75	0.090	3.06	3.09	3.02	0.759
Administrative regulations	3.15	3.46	2.84	0.004*	3.14	3.33	2.94	0.060**	3.52	3.65	3.39	0.192
Infrastructure	3.23	3.50	2.96	0.033*	3.05	3.17	2.92	0.292	3.14	3.20	3.07	0.597

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

According to the cluster members in Bulgaria, the administrative regulations and access to infrastructure are bigger constraints to their business performance compared to the non-members from the same country. Both groups, however, agree that access to finance and lack of adequate human resources are the biggest constraint.

Republic of Macedonia (FYROM)

The difference between cluster members and non-members is most evident in Republic of Macedonia (FYROM), especially with regard to access to finance and lack of skilled labour. It might be not surprising, since when interviewed, the cluster members pointed out that one of the biggest expectations from their participation in clusters is having better access to finance. Basically they regard clusters as a "door opener" to additional financial resources, which have been mainly provided by donor organizations through various cluster projects.

Serbia

In Serbia there is a difference between the perception of cluster members and non-members with regard to access to finance and implementation of new technologies. Both elements are considered bigger constraints by cluster members, compared to non-members. After the cluster survey, personal interviews have been conducted with part of the both, cluster members and non-members and they confirmed the assumption that cluster members expect to have more success with tackling their problems by working together.

7.2.1.2 Comparisons between countries (ANOVA country)

The results for the question C2 related to comparison between the countries have been presented in the table 7.5

Table 7.5 Comparison between countries

C2 To what extent the follow factors have been constraint to your performance in the last 3 years	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serb. vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM
Lack of skilled labour	0.000*	0.000*	0.000*	0.081**	0.013*	/	0.010*	/	0.000*	0.000*	0.000*	/
Access to finance	0.000*	/	0.000*	0.054**	0.099**	/	/	/	0.000*	0.015*	0.000*	/
Implemen-ting new technology	0.659	/	/	/	0.643	/	/	/	0.140	/	/	/
Implemen-ting new forms of organization	0.824	/	/	/	0.419	/	/	/	0.604	/	/	/
Quality management	0.086**	0.072**	/	/	0.486	/	/	/	0.075	0.064	/	/
Administra-tive regulations	0.011*	/	0.030*	0.019*	0.312	/	/	/	0.014*	/	0.016*	0.058**
Infrastructure	0.551	/	/	/	0.392	/	/	/	0.768	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

In cases when ANOVA country indicated that there is a difference between SMEs from different countries, post hoc analyses indicated that regarding the skilled labour there is a difference between SMEs in Bulgaria and Serbia and Bulgaria and Republic of Macedonia (FYROM). In Bulgaria they see the lack of skilled labour as a constraint, while in Republic of Macedonia (FYROM) and especially in Serbia this problem is not so obvious. The same applies to access to finance. In Bulgaria this is bigger constraint compared to Republic of Macedonia (FYROM) and especially Serbia. Regarding the administrative regulations, (bureaucracy) the Serbian companies find it a more important constraint than companies in Republic of Macedonia (FYROM) and Bulgaria.

Comparisons of cluster members between countries

Only regarding the skilled labour significant differences can be noticed between the cluster members in the selected countries. Cluster members from Bulgaria have much more difficulties with finding adequate human resources compared to their counterparts

in Serbia. The reason for that might be topic for further research. For the rest of the given variables there is almost no difference between cluster members in the analysed countries.

Comparisons of non-members between countries

Non-members in the three countries differ in their opinion especially in defining the lack of skilled labour, access to finance and heavy administrative regulations as constraints to their performance.

Non-members in Bulgaria rate the skilled labour and access to finance as bigger constraint than the non-members in Republic of Macedonia (FYROM) and Serbia, while in Serbia the administrative regulations affect more negatively business than compared to Republic of Macedonia (FYROM) and Bulgaria.

7.3 Clusters and access to resources and support

The question C3 aims at exploring if, as the cluster literature suggests, the cluster members have better access to necessary resources and support needed. The following alternatives have been given, which were based on the literature review:

- Financial resource
- Skilled labour
- Raw materials
- Supporting institutions
- Business partners
- Information
- Technology
- Customers

The surveyed companies were given opportunity to add additional resources, which were not mentioned in the question, but none of them opted for that.

7.3.1 One way ANOVA Question C3

In the Table 7.6 the mean scores of cluster members vs. non-members in all three countries are presented. Although only those non-members that have at least basic understanding about clusters have been included in the survey, they do not have same knowledge about cluster benefits regarding the access to resources, since they don't have direct experience with implementing cluster activities. Therefore this limitation needs to be taken in consideration when comparing both groups. According to the average mean scores, both groups of companies in all three countries (regardless if they are cluster members or not) in general tend to disagree with a fact that being a cluster member or not influence their access to finance, skilled labor, raw materials, technology and customers.

Table 7.6 QC3 – Clusters and access to production factors – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
C3 As (not) cluster members, to what extent do you agree that your comp. has better access to	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
financial resources	2.94	3.11	2.76	0.007*
skilled labour	2.70	2.95	2.45	0.000*
raw materials	2.71	2.87	2.55	0.013*
supporting institutions	3.33	3.51	3.16	0.002*
business partners	3.26	3.55	2.98	0.000*
information	3.60	4.03	3.16	0.000*
technology	3.07	3.29	2.87	0.001*
customers	2.98	3.22	2.75	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

7.3.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

Although the average mean scores of the cluster members are higher than those of the non-members, it is evident that besides the access to information and to some extent access to partners and supporting institutions, cluster members do not think that they receive significant benefits from their clusters.

Main benefit that cluster members receive from cluster is access to information. According to the average mean score (4.03) they all agree that they have better access to information. Cluster members also believe that they have better access to business partners and business supporting organisations as a result of being involved in cluster activities.

However, it is evident that cluster members do not think that they have better access to raw materials and skilled labour, which are one of the most important benefits that clusters produce according to the literature and experience from industrialized countries.

The fact, however, that clusters positively affects the access to business partners, information and business supporting institutions is confirmed by the position of surveyed non-members, which feel that as a result of being outside of clusters they have more difficult access to information and business support institutions.

The non-members mostly disagree with the statements that they have difficulties to access the financial resources, skilled labour, raw materials, supporting institutions, business partners, technology and customers as a result of staying outside of clusters. Partly it could be result of not being aware of the cluster benefits, but according to the not very high mean scores of cluster members, most probably the non-members might be right when they feel that they are not losing anything by not participating in clusters.

Cluster members vs. non-members by country

When analysing the country specifics the same conclusion can be derived that in each of the countries without exception cluster members have higher mean scores compared to non-members regarding all of the variables. It is also evident that cluster members in Republic of Macedonia (FYROM) compared to cluster members in other analysed countries, are least satisfied with the extra benefits they receive as a result of being cluster members

Table 7.7 Cluster members vs. non-members by country

Mean scores Cluster members vs. non-members by country												
C3 As a (non) cluster member, to what extent do you agree that your comp. has better access to	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc
financial resources	3.30	3.58	3.02	0.016*	2.60	2.69	2.52	0.401	2.91	3.04	2.77	0.190
skilled labour	2.66	2.86	2.47	0.074**	2.58	2.85	2.33	0.008*	2.86	3.15	2.57	0.007*
raw materials	2.69	2.82	2.57	0.280	2.69	2.88	2.52	0.079**	2.74	2.91	2.57	0.141
supporting institutions	3.45	3.76	3.14	0.002*	3.13	3.25	3.02	0.252	3.42	3.53	3.32	0.259
business partners	3.28	3.67	2.88	0.001*	3.22	3.33	3.12	0.274	3.29	3.64	2.94	0.002*
information	3.72	4.26	3.15	0.000*	3.49	3.85	3.16	0.000*	3.57	3.96	3.17	0.000*
technology	3.09	3.31	2.87	0.062**	3.02	3.17	2.88	0.162	3.11	3.38	2.84	0.013*
customers	3.02	3.26	2.76	0.025*	2.81	2.88	2.75	0.509	3.13	3.53	2.74	0.001*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

There is significant difference between the perceptions of both groups in Bulgaria. Cluster members have better access to information (4.26), business support institutions, business partners and financial institutions, compared to non-members.

Republic of Macedonia (FYROM)

It is the information where being a cluster member or not makes a difference in Republic of Macedonia (FYROM). One of the interesting findings is that the expectation of the cluster members in Republic of Macedonia (FYROM) that clusters will improve their access to finance was not met. They neither agree nor disagree that clusters have influence on their access to finance.

Serbia

In Serbia it is also evident that cluster produces some benefits. The cluster members think that they have better access to information, business partners and customers. Only in Serbia the companies have better access to customers, and clusters positively influence

expanding on new markets, which might be a result of joint trade fair participations and other market related activities, frequently organized through clusters.

7.3.1.2 Comparisons between countries (ANOVA country)

Table 7.8 Comparison between countries

C3 As (not) cluster members, to what extent do you agree that your comp. has better access to	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serb.	Serb. vs. RM
financial resources	0.000*	0.000*	0.026*	/	0.001*	0.000*	0.051**	/	0.037*	0.028*	/	/
skilled labour	0.166	/	/	/	0.347	/	/	/	0.420	/	/	/
raw materials	0.934	/	/	/	0.926	/	/	/	0.951	/	/	/
supporting institutions	0.041*	0.058	/	0.096**	0.063**	0.050*	/	/	0.224	/	/	/
business partners	0.902	/	/	/	0.260	/	/	/	0.476	/	/	/
information	0.319	/	/	/	0.073**	0.072**	/	/	0.993	/	/	/
technology	0.822	/	/	/	0.689	/	/	/	0.978	/	/	/
customers	0.111	/	/	/	0.014*	/	/	0.010*	0.995	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparisons of cluster members between countries

Regarding the access to different production factors there is a difference between the perceptions of cluster members in different countries.

In Bulgaria cluster members state that they have better access to financial resources, compared to cluster members in Republic of Macedonia (FYROM) and Serbia. The same can be observed for the supporting institutions and information, although the difference is not that evident as with the access to financial resources. This is not surprising since in Bulgaria the cluster members have access to significant financial resources through Cluster grant schemes, such as the one in 2008-2009, financed by the EU Phare Programme. The cluster members in Republic of Macedonia (FYROM) disagree that

being involved in the cluster gives them better access to the mentioned factors. According to the cluster members in Serbia the clusters help them to expand their markets and have better access to customers, compared to Republic of Macedonia (FYROM), where cluster members do not see any particular benefit in that area.

Comparisons of non-members between countries

There is no particular difference between the opinion of the companies which do not participate in clusters in the selected countries regarding the access to the mentioned production factors, institutions, information and customers. Only in the case of access to financial resources there is difference between Bulgaria and Republic of Macedonia (FYROM). The companies in Bulgaria share an opinion that being a cluster member does not influence their access to finance, while non-members in Republic of Macedonia (FYROM) indicate that they could have better access to finance if they would have participated in clusters.

7.4 Clusters and access to suppliers

In the question C4 the companies were asked to assess their access to suppliers after becoming cluster members with the ranking the following statements:

- Our company has better access to suppliers, since they are more concentrated in the cluster
- There is no particular change regarding the access to suppliers since we joined the cluster
- The selection of our suppliers is mainly driven by price, regardless whether the supplier is cluster member or not
- Suppliers that are members of the cluster have advantage over non-cluster members

7.4.1 One way ANOVA Question C4

SMEs in all of the countries (regardless if they are cluster members or not) do not see any positive correlation between being a cluster member and having better access to supplier. According to both of the groups there no particular change has occurred regarding their access to suppliers, as a result of being or not being a cluster member. They agree that the decision to buy from their suppliers is driven my business motives only, regardless if they are cluster members or not.

The lowest mean scores is for the first statement - *Our company has better access to suppliers, since they are more concentrated in the cluster* (2.41), which clearly indicate that the surveyed companies, regardless if they are cluster members or not disagree that clusters contribute to better access to suppliers. This attitude is confirmed with the value of the mean score for the third statement (3.96), indicating that they agree that s*election of their suppliers is driven by price, regardless if they are cluster member or not*

Table 7.9 QC4 – Clusters and access to suppliers – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
C4 Please express your opinion on the following statements about your access to suppliers after joining the cluster (or not doing so)	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Our company has better access to suppliers, since they are more concentrated in the cluster	2.41	2.68	2.15	0.000*
There is no particular change regarding the access to suppliers	3.49	3.64	3.34	0.020*
Selection of our suppliers is driven by price, regardless if they are cluster member or not	3.96	4.03	3.89	0.217
Suppliers that are cluster members have advantage over non-cluster members	2.46	2.81	2.17	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal difference

7.4.1.1. Cluster members vs. non-members

Cluster members vs. non-members in all three countries

When the attitude of cluster is compared to that one of the non-members with regard of access to suppliers, from the level of mean scores it could be noted that it is not only that

cluster members feel that they do not have better access to suppliers, but the non-members are even more confident that they are not losing anything with regard to access of suppliers as a result of staying outside of clusters.

Cluster members vs. non-members by country

Table 7.10 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
C4 Please express your opinion on the following statements about your access to suppliers after joining the cluster (or not doing so)	**Bulgaria**				**FYROM**				**Serbia**			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
Our company has better access to suppliers, since they are more concentrated in the cluster	2.30	2.58	2.02	0.031*	2.48	2.66	2.31	0.113	2.46	2.81	2.11	0.001*
There is no particular change regarding the access to suppliers	3.84	3.73	3.94	0.361	3.35	3.78	2.98	0.000*	3.27	3.41	3.13	0.194
Selection of our suppliers is driven by price, regardless if they are cluster member or not	4.20	4.02	4.38	0.083**	4.03	4.28	3.81	0.008*	3.64	3.81	3.46	0.132
Suppliers that are members of the cluster have advantage over non-cluster members	2.38	2.69	2.08	0.034*	2.49	2.66	2.35	0.155	2.57	3.09	2.07	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

There is no difference between cluster members vs. non-members in different countries, which means they follow the same pattern as identified in the all of them together.

7.4.1.2 Comparisons between countries (ANOVA country)

Results of the question C4 related to comparison between the countries have been presented in the table 7.11.

Table 7.11 Comparison between countries

C4 Please express your opinion on the following statements about your access to suppliers after joining the cluster (or not doing so)	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serb. vs. RM
We have better access to suppliers	0.487	/	/	/	0.687	/	/	/	0.286	/	/	/
There is no change regarding the access to suppliers	0.001*	0.005*	0.001*	/	0.221	/	/	/	0.000*	0.000*	0.000*	/
Selection of our suppliers is driven by price, regardless if they are cluster member or not	0.001*	/	0.001*	0.020*	0.096**	/	/	0.078**	0.000*	0.010*	0.000*	/
Suppliers that cluster members have advantage over non-cluster members	0.576	/	/	/	0.241	/	/	/	0.270	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

When SMEs (regardless if they are cluster members or not) are analysed, there are not big differences except that the position of Serbian companies on the statements:

"There is no particular change regarding the access to suppliers" and

"Selection of our suppliers is driven by price, regardless if they are cluster member or not"…

is not that strong compared to the position of Bulgarian ones. For the first sentence Serbian companies neither agree nor disagree, while for the second one they agree, but the mean score is lower (3.64) than the one of Bulgarian companies (4.20)

The surveyed companies in all countries have the strongest position regarding the statement, that selection of their suppliers is strictly driven by the price, regardless if they are cluster members or not. All of their mean scores are in the category between 3.5 and 4.5 which means that cluster do not have any influence on their decision from whom to buy. This position is confirmed with their opinion about the statement *Suppliers that are*

members of the cluster have advantage over non-cluster members. The mean scores are lowest – between 2.38 and 2.59, which means that they disagree with that statement.

Comparison of cluster members between countries

The cluster members from different countries are consistent in their views regarding their access to suppliers. There is almost no difference in their answers.

They have highest mean scores for the statement, *Selection of our suppliers is driven by price, regardless if they are cluster member or not* (from 3.81 for Serbia to 4.28 for Republic of Macedonia (FYROM)) and lowest for the statement *Suppliers that are members of the cluster have advantage over non-cluster members* (2.66 Republic of Macedonia (FYROM), 2.69 Bulgaria and 3.09 Serbia).

Comparison of non-members between countries

The companies which are non-members in Bulgaria and Republic of Macedonia (FYROM) agree more with the following statements, than their counterparts in Serbia:
"There is no particular change regarding the access to suppliers" and
"Selection of our suppliers is driven by price, regardless if they are cluster member or not"…

There is, however, no significant difference between the perceptions of non-members in the three countries. It is evident that they all have very strong disagreement with the statement *Suppliers that are members of the cluster have advantage over non-cluster members,* because of the values of their mean scores (Serbia 2.07, Bulgaria 2.08 and Republic of Macedonia (FYROM) 2.3)

7.5 Clusters and access to finance

In the question C5 the companies were asked to assess their access to finance after becoming cluster members with the ranking the following statements:

- Our company has better access to financial institutions, since they are more concentrated in the cluster

- There is no change regarding the access to finance since we joined the cluster
- The selection of our financial institution is driven by quality and price of services, regardless whether the financial institution is cluster member or not
- Financial institutions, cluster members have advantage over non-members

7.5.1 One way ANOVA Question C5

Question 5 is related not to general access to finance, but to the access to finance to financial institutions that are cluster members. That doesn't mean that as cluster members they do not have better access to external financial sources, because as indicated in other questions they do have better access to donor organizations. Since no financial institution has been identified among the cluster members, during the personal interviews, the issue of access to finance from financial institutions that are eventually cluster members, was discussed on hypothetical grounds only. The interviews demonstrated that hypothetically if financial institutions would have been cluster members, they would not have any advantage over non-members if they do not offer better financial conditions.

The value of the overall mean scores is highest for the statement *The selection of our financial institution is mainly driven by quality and price of services, regardless whether the financial institution is cluster member or not* (3.96), while is west for the statement *Financial institutions that are cluster members have advantage over non-members* (2.41).

Table 7.12 QC5 – Clusters and access to finance – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
C5 Please express your opinion on the following statements about your access to finance after joining your cluster (or not doing so)	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Our comp. has better access to financial institutions within our cluster	2.50	2.62	2.37	0.064**
There is no particular change regarding the access to finance	3.47	3.52	3.42	0.427
Selection of FI is driven by qual. and price, regardless if they are cl.. members	3.96	4.04	3.89	0.191
Fin. inst. that are cluster members have advantage over non-cluster members	2.41	2.66	2.17	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

7.5.1.1 Cluster members vs. non-members

Although only non-members that have at least basic understanding about clusters have been included in the survey, since they have not been directly involved in cluster activities, they do not have same knowledge about cluster benefits regarding the access to finance. This limitation needs to be taken in consideration when comparing both groups.

Cluster members vs. non-members in all three countries

The mean scores indicate that non-members are more sceptical that cluster members give priority to financial institutions that are cluster members, than the cluster members themselves (mean score of 2.17 vs. 2.66). In both cases, however they agree that selection of financial institution is driven by quality and price and not by the fact if they are cluster member or not. Mean score of the cluster members for the third statement is 4.04, while non-members rate it with 3.89, which shows almost no difference.

Cluster members vs. non-members by country

Table 7.13 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
C5 Please express your opinion on the following statements about your access to finance after joining cluster)	**Bulgaria**				**FYROM**				**Serbia**			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
Our comp. has better access to financial institute.	2.62	2.92	2.30	0.025*	2.37	2.22	2.50	0.150	2.51	2.71	2.30	0.071**
There is no particular change regarding the access to finance	3.63	3.43	3.85	0.125	3.46	3.77	3.18	0.002*	3.32	3.38	3.26	0.564
Selection of fin. inst. is driven regardless whether they are cl.. members	4.24	4.12	4.37	0.192	3.85	4.13	3.60	0.004*	3.79	3.84	3.74	0.640
Financial Inst. that are members of clusters have advantage over non-cluster members	2.32	2.73	1.89	0.001*	2.46	2.50	2.43	0.724	2.45	2.76	2.15	0.002*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

The biggest difference between the cluster members and non-members in Bulgaria is regarding the fourth statement (ANOVA 0.001). The position of the non-members is especially strong. The value of 1.89 indicates that they do not agree that the financial institutions that are members of clusters would have advantage over non-members.

Republic of Macedonia (FYROM)

According to ANOVA, the biggest discrepancy between the cluster members and non-members on Republic of Macedonia (FYROM) is about the statements *There is no particular change regarding the access to finance since we joined the cluster* (0.002) and *The selection of our financial institution is mainly driven by quality and price of services, regardless whether the financial institution is cluster member or not* (0.004)

Serbia

The biggest difference between the cluster members and non-members in Bulgaria is regarding the fourth statement - *Financial institutions that are members of clusters have advantage over non-cluster members* (ANOVA 0.002).

7.5.1.2 Comparison between countries (ANOVA country)

Table 7.14 Comparison between countries

C5 Please express your opinion on the following statements about your access to finance after joining your cluster (or not doing so)	**Comparison of both cluster members and non-members between countries**				**Comparison of cluster members between countries**				**Comparison of non-members between countries**			
	ANOVA Country (all SMEs)	**Post hoc analysis**			**ANOVA Country (cluster mem-bers)**	**Post hoc analysis**			**ANOVA Country (non-mem-bers)**	**Post hoc analysis**		
		BG vs. RM	**BG vs. Serbia**	**Serb. vs. RM**		**BG vs. RM**	**BG vs. Serb.**	**Serb. vs. RM**		**BG vs. RM**	**BG vs. Serbia**	**Serb. vs. RM**
We have better access to fin. inst.	0.307	/	/	/	0.018*	0.015*	/	/	0.547	/	/	/
No change regard. taccess to finance	0.146	/	/	/	0.236	/	/	/	0.001*	0.002*	0.010*	/
Selection of fin. inst. is driven by qual. and price only	0.001*	0.009*	0.003*	/	0.247	/	/	/	0.000*	0.000*	0.003*	/
Financial Inst. that are cluster members have advantage over non-members	0.607	/	/	/	0.536	/	/	/	0.011*	0.008*	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

The biggest difference is regarding the statement *Selection of financial institutions is driven by quality and price, regardless whether they are cluster members or not.* The post hoc analysis shows that this difference is most visible between Bulgaria and Republic of Macedonia (FYROM) (4.24 vs. 3.85) and Bulgaria and Serbia (4.24 vs. 3.79)

Comparisons of cluster members between countries

The cluster members in Republic of Macedonia (FYROM) are more sceptical compared to their colleagues from Serbia and especially Bulgaria that they would have better access to financial institutions in a case they would have been members of a cluster.

Comparisons of non-members between countries

In general non-members in all three countries state that in process of selecting financial institutions as business partners they are not interested if they are cluster members or not. However the non-members in Bulgaria agree with this statement to a higher extent than the non-members from Serbia and especially Republic of Macedonia (FYROM).

7.6 Measuring business performance

In question C6 the companies were asked how often they use two types of competitiveness indicators to track their performance: a) basic financial indicators: sales, profit, turnover, etc. and b) basic non-financial measures, e.g. market share, value added, productivity, innovativeness, etc.

7.6.1 One way ANOVA Question C6

SMEs in all of the countries (both cluster members and non-members) use often both financial and non-financial indicators for measuring their competitiveness, but they use more financial than non-financial indicators.

Table 7.15 QC6 – Competitiveness indicators – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
C6 How often do you use the following competitiveness indicators to track your results?	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
basic financial indicators: sales, profit, turnover, etc.	4.07	4.21	3.93	0.022*
basic non-financial measures, (market share, value added, productivity, innovativeness...)	3.66	3.79	3.54	0.032*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

7.6.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

There is no significant difference between cluster and non-cluster members regarding which indicators they use for measuring business performance.

Cluster members vs. non-members by country

Table 7.16 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
C6 How often do you use the following competitiveness indicators to track your results?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
basic financial indicators: sales, profit, turnover, etc.	4.59	4.61	4.56	0.718	3.83	4.14	3.55	0.006*	3.80	3.88	3.72	0.514
basic non-financial measures, (market share, value added, productivity, innovativeness..)	3.93	4.06	3.79	0.170	3.56	3.69	3.44	0.206	3.49	3.60	3.38	0.303

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

There is no significant difference between the cluster members vs. non-members in each of the countries individually, except in the case of Republic of Macedonia (FYROM), where cluster members use more financial indicators for measuring their competitiveness than the non-members. It is difficult to make any assumption about the reasons behind that finding.

7.6.1.2 Comparison between countries (ANOVA country)

Table 7.17 Comparison between countries

C6 How often do you use the following competitive-ness indicators to track your results?	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serb	Serb. vs. RM		BG vs. RM	BG vs. Serbia	Serb. vs. RM		BG vs. RM	BG vs. Serb.	Serb. vs. RM
basic financial indicators: sales, profit, turnover, etc.	0.000*	0.000*	0.000*	/	0.002*	0.056**	0.001*	/	0.000*	0.000*	0.000*	/
basic non-financial measures, (market share, value added, productivity)	0.005*	0.027*	0.008*	/	0.056**	/	0.062**	/	0.103	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

In Bulgaria companies measure competitiveness more than in Serbia and Republic of Macedonia (FYROM). This is especially evident regarding using the financial indicators. The interviewed companies (regardless if they are cluster members or not) in Bulgaria indicated that they always use financial indicators for measuring their competitiveness (mean score – 4.59), which is higher than compared to Republic of Macedonia (FYROM) and Serbia who use them often (3.83 and 3.80). In Bulgaria the companies also use the non-financial indicators more than companies in Serbia and Republic of Macedonia (FYROM).

Comparisons of cluster members between countries

The same conclusion can be made for cluster members. In Bulgaria the cluster members measure competitiveness more than in Serbia and Republic of Macedonia (FYROM). The interviewed cluster members in Bulgaria indicated that they always use financial indicators for measuring their competitiveness (mean score – 4.61), which is higher than in Republic of Macedonia (FYROM) and Serbia who use them often (4.14 and 3.88).

Comparisons of non-members between countries

According to the post hoc analysis the non-members in Bulgaria use more basic quantitative competitiveness indicators (mean score – 4.56) than non-members in Serbia and especially Republic of Macedonia (FYROM) (mean score – 3.55)

7.7 Clusters and business performance

The question C7 is about the change of the performance of the surveyed companies over the last 2 years (2009-2010), taking in consideration a) basic financial indicators: sales, profit, turnover, etc. and b) basic non-financial measures, e.g. market share, value added, productivity, innovativeness, etc.

7.7.1 One way ANOVA Question C7

Being asked if their performance has changed over the last 2 years (2009-2010), the interviewed companies in all three countries pointed out that they have experienced some improvement based on both, financial and non-financial business indicators. For this question it should be taken in consideration that 1.3 % of all interviewed companies have been established for less than 6 months, before being surveyed. All of them are non-members. Around 9% of the all interviewed companies have been in operation between 6 months and two years, when they were filling the questionnaires.

Table 7.18 QC7 – Clusters and business performance – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
C7 How has your performance changed over the last 2 years on the following measures?	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
basic financial indicators: sales, profit, turnover, etc.	3.96	4.03	3.89	0.158
basic non-financial measures (market share, value add, productivity)	3.86	4.01	3.73	0.003*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal significant difference

7.7.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

According to the mean scores there is a slight difference between the cluster members and non-members about the change of their business performance in the period 2009-2010 in favour of cluster members. The improvement of business performance could be result of other factors, not only based on the fact that a company is involved in cluster initiative. It is interesting that groups, cluster members and non-members have experienced some improvement. It should be noted however, that the survey has been conducted before the economic crisis, which reached its peak in 2012.

Cluster members vs. non-members by country

Table 7.19 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
C7 How has your performance changed over the last 2 years on the following measures?	Bulgaria				FYROM				Serbia			
	Overall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Overall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Overall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
basic financial indicators: sales, profit, turnover, etc.	3.98	4.04	3.92	0.451	3.87	3.96	3.80	0.290	4.03	4.08	3.98	0.560
basic non-financial measures (market share, value add, productivity, innovativeness..)	3.97	4.12	3.81	0.047*	3.74	3.95	3.57	0.012*	3.88	3.94	3.83	0.542

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Small differences are noticeable between the cluster members and non-members in Bulgaria (mean scores 4.12 vs. 3.81) and Republic of Macedonia (FYROM) (mean scores 3.95 vs. 3.57), with regard of changes of basic non-financial indicators, but in general there is no significant difference between the cluster vs. non cluster members in each of the countries individually. That means they follow the same pattern as identified in the all of them together.

7.7.1.2 Comparison between countries (ANOVA country)

Table 7.20 Comparison between countries

C7 How has your performance changed over the last 2 years on the following measures?	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serb.	Serb. vs. RM		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM
basic financial indicators: sales, profit, turnover, etc.	0.386	/	/	/	0.752	/	/	/	0.516	/	/	/
basic non-financial measures (market share, value add, productivity)	0.134	/	/	/	0.459	/	/	/	0.161	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SME, cluster members and non-members between countries

According to table 6.26 there is almost no any statistical difference between the answers from the selected countries.

7.8 Competitiveness indicators

In the question C8 the companies were asked to evaluate their competitiveness performance after joining a cluster (or deciding not to do so) based on the criteria, divided in five groups:

- Main financial information
- Product and/or service innovation
- Customer satisfaction
- Suppliers
- People management

7.8.1 One way ANOVA Question C8

When asked to explain the change in their business performance, based on specific indicators the companies in all three countries (regardless of their participation in cluster initiatives), confirmed that there is some improvement in their business performance.

Table 7.21 QC8 – Competitiveness indicators – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries					
C8 Please evaluate your competitiveness performance on the following criteria:		Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Main financial information					
Turnover (on domestic market)	(R)***	2.70	2.75	2.65	0.279
Export turnover	(R)	2.90	2.83	2.96	0.150
Marketing expenditure	(R)	2.93	2.88	2.98	0.212
R&D expenditure	(R)	2.91	2.80	3.01	0.010*
Capital investments	(R)	2.87	2.83	2.90	0.474
Pre-tax profit	(R)	2.81	2.78	2.84	0.463
Market share	(R)	2.70	2.74	2.66	0.386
Product and/or service innovation					
Turnover from new products/services	(R)	2.72	2.74	2.70	0.686
Turnover from new market segments	(R)	2.78	2.76	2.79	0.691
Turnover from new geographical markets	(R)	2.84	2.80	2.87	0.493
Number of new customers	(R)	2.62	2.68	2.56	0.221
Customer satisfaction					
Number of customers	(R)	2.59	2.63	2.54	0.325
Number of orders received	(R)	2.64	2.67	2.60	0.495
Suppliers					
Nr. of suppliers of core products/services	(R)	2.77	2.78	2.76	0.722
People management					
Number of employees	(R)	2.77	2.77	2.76	0.823
Number of managers	(R)	2.90	2.84	2.95	0.090**
Number of new employees	(R)	2.77	2.78	2.75	0.742

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference (R) – recoded – the question has been recoded because opposite Likert scale was used compared to other questions

7.8.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

The mean scores for offered alternatives are almost same between the cluster members and non-members. There is no pattern between both groups and no evidence that clusters contribute to improving the competitiveness.

R&D expenditures by cluster members are higher than those of non-members, although this difference is not so significant. Rationale for that might be that cluster members are encouraged and financed by cluster support organizations to enter into joint R&D activities, because according to the literature innovation and R&D are closely related to the cluster concept.

Regarding the capital investments and number of customers, it is evident that they are even higher among the non-members, but the small difference cannot bring to conclusion that being outside of cluster positively influences the level of capital investments and number of customers.

Cluster members vs. non-members by country

Results for the question C8 related to comparing the mean scores between the cluster members and non-members by country have been presented in the table 7.22

Table 7.22 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
C8 Please evaluate your performance after joining your cluster:	**Bulgaria**				**FYROM**				**Serbia**			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
Main financial information												
Turnover (on domestic market)	2.59	2.73	2.45	0.118	2.84	2.84	2.84	0.951	2.68	2.67	2.69	0.916
Export turnover	3.00	3.02	2.98	0.799	2.93	2.77	3.08	0.011*	2.77	2.70	2.84	0.337
Marketing expenditure	2.96	2.93	2.98	0.783	2.98	2.93	3.02	0.427	2.85	2.77	2.93	0.234
R&D expenditure	2.92	2.78	3.06	0.082**	2.95	2.84	3.05	0.135	2.84	2.78	2.90	0.255
Capital investments	2.82	2.79	2.85	0.785	2.85	2.82	2.88	0.712	2.93	2.87	2.98	0.438
Pre-tax profit	2.71	2.80	2.62	0.329	2.85	2.72	2.98	0.028*	2.89	2.83	2.95	0.135
Market share	2.66	2.80	2.52	0.085**	2.83	2.79	2.86	0.507	2.63	2.61	2.65	0.760
Product or service innovation												
Turnover from new products or services	2.69	2.73	2.65	0.644	2.83	2.91	2.75	0.209	2.64	2.58	2.70	0.467
Turnover from new market segments	2.83	2.78	2.87	0.585	2.87	2.93	2.81	0.337	2.64	2.57	2.70	0.412
Turnover from new markets	2.86	2.79	2.93	0.401	2.91	2.93	2.89	0.766	2.72	2.67	2.77	0.510
Nr. f new customers	2.62	2.77	2.46	0.101	2.81	2.80	2.82	0.916	2.47	2.48	2.45	0.882
Customer satisfaction												
Nr. of customers	2.51	2.67	2.35	0.102	2.90	2.91	2.88	0.064**	2.49	2.58	2.40	0.305
Number of orders received	2.61	2.73	2.49	0.191	2.87	2.93	2.80	0.923	2.51	2.47	2.55	0.632
Suppliers												
Nr. of suppliers of core products	2.77	2.77	2.77	0.989	2.78	2.77	2.78	0.886	2.76	2.80	2.71	0.425
People management												
Nr. of employees	2.77	2.89	2.65	0.108	2.84	2.75	2.93	0.118	2.69	2.67	2.71	0.774
Nr. of managers	2.95	2.96	2.94	0.874	2.88	2.73	3.02	0.005*	2.87	2.84	2.89	0.549
Number of new employees	2.79	2.91	2.67	0.069**	2.80	2.74	2.86	0.364	2.69	2.64	2.73	0.486

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

The difference between cluster members and non-members regarding investments in the field of Research and Development (R&D) is most evident in Bulgaria (0.28). It might be a result of the fact that under the Cluster Grant scheme supported by the Ministry of Economy, Energy and Tourism in 2011, such cluster activities related to R&D were heavily supported. In Serbia the Ministry of Economy and Regional Development started more intensively to support innovative cluster activities, especially related to R&D in 2011.

Republic of Macedonia (FYROM)

Export turnover and Pre-tax profit of cluster members is higher than compared to non-members in Republic of Macedonia (FYROM). According to direct interviews with some of the surveyed cluster members, this is a result of business opportunities developed at trade fairs and B2B meetings, which were jointly organized with other cluster member and were supported mainly by international donor organizations, such as USAID and GIZ.

Serbia

There is almost no difference between cluster members and non-members in Serbia, which might be result either of inefficiency of implemented cluster support measures, or of lack of time for visible results with regard to business performance to be evident. For example some of the clusters, such as automotive cluster in Serbia (AC Serbia) have received significant support from UNIDO and GIZ in forms of training and introducing quality standards, but it takes more time for the benefits of soft measures to produce visible impact.

7.8.1.2 Comparison between countries (ANOVA country)

The results from the question C8 related to comparing the performance of cluster members and non-members between countries have been presented in the table 7.23.

Table 7.23 Comparison between countries

C8 Please evaluate your competitiveness performance after joining your cluster (or deciding not to do so) on the following criteria:	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster members)	Post hoc analysis			ANOVA Country (non-members)	Post hoc analysis		
		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serb. vs. RM
Main financial information												
Turnover (on domestic market)	0.073**	0.061**	/	/	0.545	/	/	/	0.034*	0.028*	/	/
Export turnover	0.082**	/	0.070**	/	0.079**	/	0.078**	/	0.283	/	/	/
Marketing expenditure	0.365	/	/	/	0.475	/	/	/	0.747	/	/	/
R&D expenditure	0.556	/	/	/	0.885	/	/	/	0.394	/	/	/
Capital investments	0.696	/	/	/	0.908	/	/	/	0.702	/	/	/
Pre-tax profit	0.177	/	/	/	0.782	/	/	/	0.005*	0.010*	0.016*	/
Market share	0.141	/	/	/	0.325	/	/	/	0.067**	0.053**	/	/
Product and/or service innovation												
Turnover from new products	0.230	/	/	/	0.116	/	/	0.095**	0.844	/	/	/
Turnover from new market segments	0.081**	/	/	0.088**	0.061**	/	/	0.049*	0.597	/	/	/
Turnover from new markets	0.240	/	/	/	0.283	/	/	/	0.548	/	/	/
Number of new customers	0.020*	/	/	0.015*	0.101	/	/	/	0.071**	/	/	/
Customer satisfaction												
Nr. of customers	0.039*	0.086**	/	0.056**	0.837	/	/	/	0.003*	0.005*	/	0.014*
Number of orders received	0.040*	/	/	0.032*	0.074**	/	/	0.076**	0.188	/	/	/
Suppliers												
Nr. of suppliers of core products	0.987	/	/	/	0.938	/	/	/	0.852	/	/	/
People management												
Nr. of employees	0.317	/	/	/	0.278	/	/	/	0.079**	0.076**	/	/
Nr. of managers	0.479	/	/	/	0.091**	0.073**	/	/	0.457	/	/	/
Number of new employees	0.438	/	/	/	0.122	/	/	/	0.332	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

There is almost no significant difference between the answers from different countries, except in the following case of the turnover. The turnover of SMEs (regardless if they are cluster members or not) from domestic operations in Bulgaria is higher the one in Republic of Macedonia (FYROM), while the export turnover of Serbian companies is higher than in Bulgarian ones.

Comparisons of cluster members between countries

There is almost no any difference between the answers from different countries, regarding the main performance indicators. According to the post hoc analysis, however, there is a difference between the cluster members from Republic of Macedonia (FYROM) and Serbia regarding their turnover from new market segments. While in Republic of Macedonia (FYROM) mean score 2.93 in Serbia it is 2.57. Both of them, however, belong to the same group of no improvement.

Almost similar situation is present regarding the number of orders received. In Republic of Macedonia (FYROM) the mean score is higher than the one in Serbia (2.80 vs. 2.55). Both of them however are in the same range, which shows no improvement after becoming cluster members.

Comparisons of non-members between countries

Non-members in Bulgaria have higher turnover than non-members in Republic of Macedonia (FYROM). They also have higher pre-tax profit than non-members in Republic of Macedonia (FYROM) and Serbia.

7.9 Regression analysis, section C –clusters and competitiveness

The results from the regression analysis of all questions are presented in the summary Table 7.24.

Table 7.24 Regression analysis – section C, clusters and competitiveness

	Cluster members vs. non-members			
Questions	**Overall**	**Bulgaria**	**FYROM**	**Serbia**
Section C				
Question C1	.123	.145	.270	.013
Question C2	.043	.030	.138	.057
Question C3	.166	.252	.179	.107
Question C4	.111	.038	.170	.223
Question C5	.076	.066	.106	.097
Question C6	.013	-.001	.051	-.008
Question C7	.025	.021	.046	-.018
Question C8	.038	.082	-.033	.035

Keys: *The closer adjusted R-square is to 1.0 the better can one variable be predicted by the other. The closer is to 0.0, it cannot be predicted if a company is cluster member or not.

Based on the adjusted R-square values from all questions, presented in Table 7.24, similar findings have been demonstrated for companies from all three countries and for each country individually.

Cluster members vs. non-members in all of the countries

When regression analysis is applied to companies from all of the countries together, it can be concluded that for the questions from the section C, which are related to clusters and competitiveness, the values of adjusted R-square are slightly higher than compared to the sections A and B, but are still closer to zero and based on their perception regarding these independent variables, it could be not predicted if the company is cluster member or not.

Cluster members vs. non-members by country

Bulgaria

In Bulgaria the highest value of adjusted R-square is for the question C3 (.252), taking the access to various factors - such as financial resources, skilled labour, raw materials, supporting institutions, business partners, information, technology and customers

- as an independent variable, which does not provide enough justification for predicting the dependant variable, based upon the independent ones.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM), the companies from both groups demonstrate highest difference in responding the questions C1 (.270), related to cluster benefits,, but still that value does not allow a valid prediction to be made if a surveyed company is cluster member or not.

Serbia

For companies in Serbia from both groups, the values of adjusted R-square are even lower, which also brings to a conclusion that no pattern can be developed, based on which clear distinction between the cluster members and non-members could be made.

Based on the adjusted R-square values from all questions of the section C, a final conclusion can be derived that it is not possible to predict if a company is cluster member or not, based on the value of the independent variables covered with the questions related to clusters and competitiveness. This conclusion counts for all of the countries together and for each of them separately.

Chapter 8

8. Survey data analysis - Cluster policy

This chapter will look at analysis of the questions D – Cluster policy. One-way analysis of variance (ANOVA) will be used, according to the following structure:

- Cluster members vs. non-members in all three countries
- Cluster members vs. non-members by country
- Comparison of both cluster members and non-members between countries
- Comparison of cluster members between countries
- Comparison of non-members between countries

The results will be presented in a summarized table for each of the questions. Additionally factor analysis has been conducted for the questions with more than two alternatives. It was conducted for all countries, as well as for each of the selected countries separately, but will be presented in Appendix only (Appendix C), since it does not directly contribute to answering research questions.

8.1 Familiarity with cluster support programs

The question D1 is aiming at determining the level of familiarity with cluster support programs in general.

8.1.1. One way ANOVA Question D1

In average companies in all three countries (regardless of their cluster status) are moderately informed about the cluster support policy programs.

Table 8.1 QD1 – Familiarity with cluster support programs – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
D1 Are you sufficiently informed about various cluster support programs in your region?	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
We are well informed	2.69	3.43	1.93	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

8.1.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

Cluster members are much more informed about cluster support programs, than companies which are not cluster members.

Cluster members vs. non-members by country

Table 8.2 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D1 Are you sufficiently informed about various cluster support programs in your region?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
We are well informed	2.93	3.63	2.16	0.000*	2.51	3.23	1.85	0.000*	2.64	3.42	1.80	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

In each of the analysed countries individually there is a significant difference between the cluster members and non-members regarding information about cluster policy programs. Cluster members are better informed about the existence of cluster support programs in their country. The difference between level of information of cluster members and non-members is most evident in Serbia, where cluster members' mean score is 3.42, while the value of the non-members is 1.80.

8.1.1.2 Comparison between countries (ANOVA country)

Table 8.3 Comparison between countries

D1 Are you sufficiently informed about various cluster support programs in your region?	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster members)	Post hoc analysis			ANOVA Country (non-members)	Post hoc analysis		
		BG vs. RM	BG vs. Serb.	Serb. vs. RM		BG vs. RM	BG vs. Serb.	Serb. vs. RM		BG vs. RM	BG vs. Serb.	Serb vs. RM
We are well informed	0.100	0.090**			0.302				0.212			

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

There is only a slight difference between the surveyed companies from Bulgaria and Republic of Macedonia (FYROM) regarding the familiarity with cluster support institutions. The mean score in Bulgaria is slightly higher than the one in Republic of Macedonia (FYROM) (2.93 vs. 2.51). Both of them however belong to the same group.

Comparisons of cluster members between countries

No significant difference between the level of information regarding cluster support programs between the cluster members in three countries.

Comparisons of non-members between countries

No significant difference between the level of information regarding cluster support programs between the non-members in three countries.

8.2 Awareness about cluster support institutions

The question D2 deals with the level of familiarity with specific cluster support institutions on national and local level. The companies were asked to assess the familiarity with the following institutions:

Institutions/ programs
National level
Ministry of Economy
Program for supporting competitiveness
Program for export promotion
Agency for Promotion of Entrepreneurship
Agency for foreign Investment
European Information and Correspondence Centre
Local level
Regional Enterprise Support Centres
Other SME centers
Business Incubators
LED office in your municipality
Local / regional consultancy firms

8.2.1 One way ANOVA Question D2

In all three countries in general the companies are not very familiar with the role of institutions that provide direct or indirect support of clusters. They are partially informed only about their Ministries of Economies, but have only heard about other institutions, without knowing in details what their roles and responsibilities are. The companies are least familiar with the EU info correspondence Centres (EIIC) (mean score 2.14).

Table 8.4 QD2 – Awareness about cluster support institutions – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
D2 To what extent you are familiar with the following institutions and their activities/ programs for cluster support?	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
National level				
Ministry of Economy	3.05	3.32	2.77	0.000*
Program for supporting competitiveness	2.58	2.86	2.28	0.000*
Program for export promotion	2.55	2.84	2.25	0.000*
Agency for Promotion of Entrepreneurship	2.40	2.56	2.24	0.005*
Agency for foreign Investment	2.52	2.73	2.31	0.001*
EU Information. and Correspondence Centre	2.14	2.29	1.99	0.011*
Local level				
Regional Enterprise Support Centres	2.60	2.84	2.35	0.000*
Other SME centres	2.50	2.67	2.33	0.006*
Business Incubators	2.39	2.58	2.20	0.003*
LED office in your municipality	2.27	2.25	2.29	0.763
Local / regional consultancy firms	2.59	2.76	2.43	0.017*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

8.2.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

The cluster members in all three countries are significantly more familiar with the institutions that provide support for SMEs and cluster initiatives than non-members. This is especially evident for institutions at national level, such as Ministries of Economy and Agencies for promotion of entrepreneurship, export promotion, competitiveness and investment promotion. It is not surprising, since in addition to international organizations, the Ministry of Economy in all of the three countries provides the biggest support for cluster initiatives under their SME support programs.

Cluster members vs. non-members by country

Table 8.5 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D2 To what extent you are familiar with the following institutions for cluster and SME support?	**Bulgaria**				**FYROM**				**Serbia**			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
National level												
MoE	3.25	3.54	2.96	0.008*	2.90	3.20	2.57	0.002*	3.00	3.20	2.78	0.033*
Program for supporting competitive.	2.83	3.13	2.53	0.011*	2.50	2.80	2.18	0.002*	2.40	2.67	2.13	0.008*
Program for export promotion	2.27	2.52	2.02	0.018*	2.47	2.69	2.22	0.020*	2.92	3.31	2.51	0.000*
APERM	2.26	2.41	2.10	0.130	2.39	2.63	2.15	0.014*	2.56	2.65	2.47	0.343
Agency for foreign Investment	2.33	2.43	2.22	0.344	2.60	2.94	2.24	0.001*	2.64	2.81	2.47	0.079**
EUICC	2.07	2.24	1.90	0.093**	2.11	2.23	1.98	0.236	2.24	2.40	2.09	0.113
Local level												
RESC	2.68	2.96	2.39	0.025*	2.33	2.30	2.37	0.740	2.77	3.27	2.30	0.000*
Other SME centres	2.68	2.92	2.43	0.031*	2.27	2.32	2.23	0.653	2.53	2.78	2.33	0.021*
Business Incubators	2.49	2.57	2.42	0.491	2.30	2.49	2.08	0.054**	2.38	2.70	2.09	0.006*
LED offices	2.26	2.39	2.13	0.294	2.46	2.30	2.64	0.132	2.06	2.00	2.11	0.606
Local / reg. consultants	2.69	2.89	2.49	0.089**	2.56	2.76	2.35	0.095**	2.51	2.59	2.43	0.509

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

On national level Bulgarian cluster members are more familiar with the cluster support programs of the Ministry of Economy, Energy and Tourism (MEET), Program for supporting competitiveness, and Program for export promotion, than compared to their non-member colleagues. On regional/local level the cluster members are also more familiar with the services offered by Regional Enterprise Support Centres and other SME Centres.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) cluster members are also more familiar with the institutions for cluster support on national level than compared to non-members. On regional and local level there is no significant difference between cluster members and non-members regarding the institutions, which could eventually play important role in cluster development. That might be not surprising taking in consideration the size of the country since most of the cluster initiatives has been established and supported on national level.

Serbia

On national level in Serbia cluster members are more familiar with the Ministry of Economy and Regional Development, Program for supporting competitiveness, Program for export promotion. For example the mean score of cluster members regarding familiarity with Export promotion program is 0.80 higher than the same of non-members. On regional and local level Regional Enterprise Support Centres, other SME centres and Business incubators have been recognised as important institutions in cluster support process.

8.2.1.2 Comparisons between countries (ANOVA country)

The results for the question D2 related to comparison between the countries have been presented in the table 8.6

Table 8.6 Comparison between countries

D2 To what extent you are familiar with the following institutions and their activities/ programs for cluster and SME support?	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serbia	Serb. vs. RM		BG vs. RM	BG vs. Serb.	Serb. vs. RM		BG vs. RM	BG vs. Serbia	Serb. vs. RM
National level												
Ministry of Economy	0.046*	0.042*	/	/	0.193	/	/	/	0.113	0.093**	/	/
Program for support. competiti-veness	0.012*	0.075**	0.013*	/	0.138	/	/	/	0.037*	/	0.048*	/
Program for export promotion	0.000*	/	0.000*	0.008*	0.002*	/	0.002*	0.021*	0.019*	/	0.014*	/
Agency for Entrepre-neurship Promotion	0.086**	/	0.069**	/	0.450	/	/	/	0.079**	/	0.091**	/
Agency for FDI	0.071**	/	0.087**	/	0.060**	0.059**	/	/	0.352	/	/	/
EU Informa-tion and Corres-pondence Centre	0.473	/	/	/	0.720	/	/	/	0.511	/	/	/
Local level												
Regional Enterprise Support Centres	0.029*	/	/	0.031*	0.001*	0.023*	/	0.001*	0.895	/	/	/
Other SME centres	0.024*	0.019*	/	/	/	0.022*	/	/	0.554	/	/	/
Business Incubators	0.452	/	/	/	0.697	/	/	/	0.122	/	/	/
LED office in municipal -lity	0.059**	/	/	0.046*	0.268	/	/	/	0.034*	0.063**	/	0.059 **
Local / regional consultan cy firms	0.544	/	/	/	0.549	/	/	/	0.801	/	/	/

Keys: *$\alpha < 0.05$ statistically significant difference ** $0.05 \leq \alpha \leq 0.1$ marginal difference

Comparison of all SMEs between countries

In Bulgaria the mean score of the familiarity with the Ministry of Economy, Energy and Tourism is highest compared to Republic of Macedonia (FYROM) and Serbia. The cluster members in Bulgaria and Serbia are more informed about the cluster support institutions on local and regional level than, the companies in the Republic of Macedonia (FYROM).

Comparisons of cluster members between countries

Cluster members in Serbia are more familiar with the Export promotion programs than cluster members in Bulgaria and Republic of Macedonia (FYROM). Cluster members in Republic of Macedonia (FYROM) are less familiar with the Regional Enterprise Support Centres and other SME support organizations, compared to their colleagues in Bulgaria and Serbia. Centres for Regional Development have been recently established in Republic of Macedonia (FYROM) (2009) and in the first years they have focused their activities on elaborating Programs for regional development (regional strategies) and implementing regional projects in cooperation with municipalities and NGOs, and only by exceptional cases with SMEs. Therefore they have not been yet recognized by the SME sector as reputable SME supporting institutions.

Comparisons of non-members between countries

Non-members in Bulgaria are better informed about the program for support of competitiveness than non-members in Republic of Macedonia (FYROM) and especially Serbia. However this difference is not very significant, because the Bulgarian non-members are informed partially while in Republic of Macedonia (FYROM) and Serbia they have heard about the program, but do not know what its role is. Regarding the program for export promotion there is an opposite situation, where Serbian non-members have been better informed than companies which are not participating in clusters in Republic of Macedonia (FYROM) and especially in Bulgaria.

Non-members in Republic of Macedonia (FYROM) are informed partially about municipalities' LED offices, compared to non-members in Serbia and Bulgaria, which have only heard about their existence. This does not necessarily mean that they have managed to build their capacities for providing quality SME support services, but at least they have become visible to the SME community.

8.3 Implementation of cluster support policy

Question D3 is related to the level of consistency and sustainability of implementation of specified cluster support policies, programs and measures. Focus was given at coordination among various state bodies, staffing, political support and financial support

8.3.1. One way ANOVA Question D3

In general in all three countries the companies are not satisfied with the coordination among cluster support institutions, staffing and the intensity of political and financial support of clusters. According to the mean score (2.64) they are least satisfied with the level of coordination among cluster support institutions.

Table 8.7 QD3 – Implementation of cluster support policy – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
D3 Have the following policies, programs and measures been implemented in a consistent and sustainable manner?	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Coordination among various state bodies	2.64	2.72	2.56	0.147
Staffing	2.81	2.89	2.74	0.135
Political support	2.71	2.72	2.70	0.820
Financial support	2.74	2.79	2.68	0.377

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

8.3.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

There is no big difference in perception about the quality of the cluster support policy between cluster members and non-members, which means that both groups are not satisfied with the coordination among cluster support institutions, staffing and the intensity of political and financial support of clusters.

Cluster members vs. non-members by country

The results of the question D3 related to the mean scores of the cluster members and non-members by country have been presented in the table 8.9

Table 8.8 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D3 Have the following measures been impl. in a consistent and sustain. manner?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc
Coordination	2.69	2.98	2.41	0.007*	2.60	2.62	2.59	0.855	2.63	2.56	2.70	0.473
Staffing	2.99	3.28	2.69	0.002*	2.73	2.70	2.76	0.715	2.72	2.67	2.77	0.585
Political support	2.84	2.88	2.79	0.674	2.59	2.62	2.56	0.694	2.71	2.67	2.74	0.708
Financial support	3.01	3.28	2.72	0.014*	2.48	2.36	2.62	0.151	2.71	2.71	2.70	0.927

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal difference

Bulgaria

In Bulgaria the cluster members are more satisfied with the consistency and sustainability of cluster support policy than non-cluster members.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) both groups are equally satisfied, or better to say not satisfied with the policies, programs and measures for supporting cluster initiatives

Serbia

In Serbia the situation is not different from Republic of Macedonia (FYROM).

8.3.1.2 Comparisons between countries (ANOVA country)

Table 8.9 Comparison between countries

D3 Have the following measures been impl. in a consistent and sustainable manner?	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serb.	Serb. vs. RM		BG vs. RM	BG vs. Serbia	Serb. vs. RM		BG vs. RM	BG vs. Serbi	Serbia vs. RM
Coordination	0.791	/	/	/	0.098**	/	/	/	0.246	/	/	/
Staffing	0.040*	0.078**	0.069**	/	0.001*	0.004*	0.002*	/	0.864	/	/	/
Political support	0.169	/	/	/	0.353	/	/	/	0.394	/	/	/
Fin. support	0.001*	0.001*	0.079**	/	0.000*	0.000*	0.021*	/	0.840	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

The answers between the countries are almost similar with exception of the perception about financial support. In Bulgaria companies are more satisfied with the financial support they receive from cluster support organizations, compared to Republic of Macedonia (FYROM) and Serbia.

In Republic of Macedonia (FYROM) companies, both cluster and non-cluster members disagree that financial support has been provided in consistent and sustainable manner (mean score is 2.48). Dissatisfaction with financial support is especially evident by cluster members in Republic of Macedonia (FYROM).

Also the companies in Bulgaria think that human resources in the cluster support institutions are more appropriate or have better capacities, when compared to companies in Republic of Macedonia (FYROM) and Serbia.

Comparisons of cluster members between countries

There is a difference between the perception of cluster members in different countries regarding the question if the policies, programs and measures have been implemented in a consistent and sustainable manner. According to the post hoc analysis, the cluster members in Bulgaria are more satisfied with the staffing and the level of financial support, than their colleagues in Republic of Macedonia (FYROM).

Comparisons of non-members between countries

There is no significant difference in perception of the non-members in the three countries regarding the consistency and sustainability of cluster support measures.

8.4 Non-financial support for clusters

Importance of the various forms of non-financial support for successful development of clusters, have been analyzed in question D4. The surveyed companies were asked to assess the following non-financial cluster assistance measures:

- Information centers (providing information on loans, donors, support programs, investors, partners, websites, brochures, etc.)
- Training programs and on-the-job training (co-financed by the public authorities)
- Training of managers
- Business planning or re-structuring
- Incubators
- Technology parks

8.4.1 One way ANOVA Question D4

In all of the selected countries both groups of companies, cluster members and non-members agree that provided variables regarding non-financial support as important, with an exception of business incubators. For the business incubators they have provided neutral statements and they find them neither important not unimportant for clusters development.

According to the surveyed companies they appreciate provision of information and training (for both cluster members and cluster managers) as very important form of non-financial support for developing successful clusters. As surveyed companies indicated, the most needed form of non-financial support is provision of information through setting up information centres (mean score 4.32). This is not surprising, since the findings from the previous questions clearly demonstrated that the lack of information about clusters was seriously hampering cluster development process and is regarded as one of the most important reasons for not having more successful examples of cluster initiatives. In the same time the improved access to information was stated as the most important benefit that cluster members receive from participation in clusters.

Table 8.10 QD4 – Non financial support for clusters – members vs. non-members

Mean scores cluster vs. non-members in all three countries				
D4 Which forms of non-financial support are important for you	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Information centres	4.32	4.36	4.28	0.289
Training programs and on-the-job training	4.18	4.20	4.17	0.763
Training of managers	4.15	4.14	4.15	0.927
Business planning or re-structuring	3.91	3.90	3.91	0.956
Incubators	3.41	3.47	3.35	0.288
Technology parks	3.62	3.65	3.60	0.657

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal difference

8.4.1.1 Cluster members vs. non-members

Although only those non-members that have at least basic understanding about clusters have been included in the survey, they do not have same knowledge about forms of non-financial support available to the clusters, since they don't have direct experience with organizing and implementing cluster activities. This limitation needs to be taken in consideration when comparing both groups.

Cluster members vs. non-members in all three countries

There is no pattern behind the perception of cluster members and non-members. There is almost no difference in their perception regarding the importance of mentioned instruments for non-financial support.

Cluster members vs. non-members by country

Table 8.11 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D4 Which forms of support are important for your cluster?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc
Info. centres	4.39	4.48	4.31	0.216	4.28	4.31	4.25	0.642	4.28	4.29	4.28	0.946
Training programs	4.31	4.16	4.45	0.074**	4.15	4.37	3.94	0.005*	4.09	4.06	4.13	0.663
Training of managers	4.28	4.10	4.47	0.018*	4.13	4.22	4.04	0.297	4.03	4.10	3.96	0.394
Bus. planning or re-structuring	3.83	3.69	3.98	0.099**	3.94	4.04	3.84	0.209	3.95	3.98	3.91	0.725
Incubators	3.43	3.30	3.55	0.186	3.36	3.64	3.05	0.002*	3.45	3.48	3.41	0.743
Techn. parks	3.50	3.42	3.58	0.470	3.52	3.59	3.45	0.482	3.84	3.94	3.74	0.265

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

In Bulgaria it is interesting that companies that are not members of any cluster think that training of cluster managers is more important, than compared to cluster members.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) cluster members rate the importance of the offered forms of non-financial support slightly higher than non-members, but the difference is not significant, except for the cases of training on the job and business incubators, where cluster members are more positive about their importance.

Serbia

The perception between the cluster members and non-members regarding this question is similar in Serbia, without any significant differences.

8.4.1.2 Comparison between countries (ANOVA country)

Table 8.12 Comparison between countries

D4 Which forms of non-financial support are important for your cluster?	**Comparison of both cluster members and non-members between countries**				**Comparison of cluster members between countries**				**Comparison of non-members between countries**			
	ANOVA Country (all SMEs)	**Post hoc analysis**			**ANOVA Country (cluster mem-bers)**	**Post hoc analysis**			**ANOVA Country (non-mem-bers)**	**Post hoc analysis**		
		BG vs. RM	**BG vs. Serb.**	**Serbia vs. RM**		**BG vs. RM**	**BG vs. Serbia**	**Serb. vs. RM**		**BG vs. RM**	**BG vs. Serbia**	**Serb. vs. RM**
Information centres (info. on on loans, support, investors, partners, etc.)	0.397	/	/	/	0.320	/	/	/	0.913	/	/	/
Training programs and on-the-job training	0.137	/	/	/	0.168	/	/	/	0.002*	0.001*	0.066**	/
Training of managers	0.110	/	0.093**	/	0.733	/	/	/	0.002*	0.014*	0.003*	/
Business planning or re-structuring	0.590	/	/	/	0.117	/	/	/	0.704	/	/	/
Incubators	0.816	/	/	/	0.257	/	/	/	0.018*	0.016*	/	/
Technology parks	0.030*	/	0.044*	0.079**	0.056**	/	0.048*	/	0.305	/	/	/

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

Between the countries there is no significant difference in perception about the offered non-financial forms of support. Only in the case of importance of technological parks there is difference, because Serbian companies rate them higher than companies in Republic of Macedonia (FYROM) and Bulgaria (mean score of 3.84 in Serbia against 3.50 and 3.52 in Bulgaria and Republic of Macedonia (FYROM)). The explanation of this might be that in cooperation with local universities and with financial support of European Investment Bank several technology parks are planned to be constructed in the forthcoming years (in the cities of Nis, Novi Sad, Vrsac, Zvezdara) (http://wbc-inco.net/object/news/104820.html)

Comparisons of cluster members between countries

The same applies for cluster members in different countries. The Serbian ones rate importance of the technological parks, higher than the cluster members in Republic of Macedonia (FYROM) and Bulgaria.

Comparisons of non-members between countries

In the case of non-members there is more noticeable difference between the perceptions of importance for non-financial support to clusters between the countries. The difference is particularly evident between Bulgaria and Republic of Macedonia (FYROM). The non-member companies in Bulgaria share the opinion that different forms of capacity building for managers and business incubator are more needed by clusters, than compared to companies from Serbia and especially Republic of Macedonia (FYROM).

8.5 Cluster intermediaries

The question D6 is about the facilitation of cluster interactions. The surveyed companies were asked to assess the following institutions as main facilitator of the communication between the cluster members:

- International donor organizations
- Government Agencies

- Chambers of Commerce
- Business Associations

8.5.1. One way ANOVA Question D6

As Table 8.13 suggests representatives of the companies from the selected countries do not consider any of the organizations (international organizations, governmental agencies, business associations and chambers of commerce) as dominant facilitator of cluster interactions.

Table 8.13 QD6 – Cluster intermediaries – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries					
D6 How often your interactions within a cluster been facilitated by the following organizations?		Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
International Organizations/Donors	(R)	3.36	3.25	3.47	0.128
Government Agencies	(R)	3.40	3.28	3.52	0.063**
Chambers of Commerce	(R)	3.33	3.39	3.26	0.343
Business Associations	(R)	3.29	3.41	3.16	0.097**

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference (R) – recoded – the question has been recoded because opposite Likert scale was used compared to other questions

8.5.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

For this question, answers of cluster members is more relevant, because being directly involved, they are more informed about who facilitates the cluster interactions, while non-members only present their assumptions. There is no noticeable difference, however, between the perception of cluster members and non-members.

Cluster members vs. non-members by country

Table 8.14 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D6 How often your interactions within a cluster been facilitated by the following organizations?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
International Organizations	3.55	3.60	3.49	0.650	3.45	2.91	3.98	0.000*	3.11	3.21	3.00	0.410
Government Agencies	3.33	3.18	3.47	0.174	3.74	3.58	3.90	0.188	3.17	3.10	3.23	0.539
Chambers of Commerce	3.59	3.73	3.44	0.247	3.46	3.43	3.49	0.793	2.95	3.02	2.87	0.507
Business Associations	3.40	3.44	3.36	0.737	3.25	3.07	3.43	0.189	3.25	3.78	2.72	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

There is no significant difference between the perception of cluster members and non-members. There is slight difference, however, regarding the role of the Chambers of Commerce and international organizations. According to cluster members they have more important role cluster development and often act as a main facilitator of inter-cluster relations.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) cluster members see the international organizations as a very important facilitator of cluster relationship, compared to non-members, who think they rarely play that role.

Serbia

In Serbia cluster members see business associations as less important than non-members with regard of facilitating cluster relations.

8.5.1.2 Comparison between countries (ANOVA country)

Results from the question D6 related to comparison between the countries have been presented in the table 8.15

Table 8.15 Comparison between countries

D6 How often your interactions within a cluster been facilitated by the following organizations?	Comparison of both cluster members and non-members between countries				Comparison of cluster members between countries				Comparison of non-members between countries			
	ANOVA Country (all SMEs)	Post hoc analysis			ANOVA Country (cluster mem-bers)	Post hoc analysis			ANOVA Country (non-mem-bers)	Post hoc analysis		
		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serb.	Serbia vs. RM		BG vs. RM	BG vs. Serbia	Serbia vs. RM
International Organizations/ Donors	0.043*	/	0.039*	/	0.030*	0.023*	/	/	0.000*	/	0.089**	0.000*
Government Agencies	0.002*	0.027*	/	0.001*	0.129	/	/	/	0.005*	0.086**	/	0.004*
Chambers of Commerce	0.000*	/	0.000*	0.008*	0.021*	/	0.016*	/	0.008*	/	0.025*	0.017*
Business Associations	0.511	/	/	/	0.045*	/	/	0.035*	0.004*	/	0.014*	0.007*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

In Serbia and Republic of Macedonia (FYROM) international organizations play more important role in facilitation of inter-cluster relationships. Since Bulgaria is member of EU the presence of international economic development organizations, such as USAID, UNDP, GIZ… is not as significant as compared in Republic of Macedonia (FYROM) and Serbia. In Bulgaria also the Chamber of commerce rarely facilitates the interactions between the cluster members. Business associations are more active in that role.

The Governmental organizations in Serbia and Bulgaria support clusters development to a greater extent, compared to Republic of Macedonia (FYROM). In Serbia, most of the cluster initiatives have been set up by top-down approach with Ministry of Economy and Regional Development being in a driving seat. In Bulgaria, the Governmental organizations such as Ministry of Economy, Energy and Tourism and Bulgarian Agency for SME promotion (BASME) provide most of the financial support and therefore also play very important role as facilitator of cluster interactions.

The role of the Chambers of Commerce is not so big in Bulgaria and Republic of Macedonia (FYROM) compared to Serbia. In Serbia there is a process of transformation of Chambers of Commerce in which the membership will cease to be mandatory starting

from 2013. Therefore some of them try to support cluster initiatives as one of the ways of offering more quality services for attracting new members and as a way of supporting their regional economies. That is a case for example with Chambers of Commerce in cities of Kragujevac and Nis, who are the main initiators of setting up automotive clusters in their regions, and they act as a main facilitator of cluster interactions.

Comparisons of cluster members between countries

Regarding the facilitation of cluster initiatives there are differences between the three selected countries. The cluster members in Republic of Macedonia (FYROM) stated that the cluster initiatives have been often facilitated by international donor organisations. In Serbia the answers are more towards not so often, while according to the Bulgarian cluster members, the clusters are rarely facilitated by donor organizations. There is also difference between Bulgaria and Serbia regarding facilitation of cluster relations by Chambers of Commerce. In Bulgaria clusters have been less facilitated by Chambers of Commerce compared to Serbia.

Comparisons of non-members between countries

There is bigger difference between the non-members in the selected countries in their position about cluster facilitation.

In Republic of Macedonia (FYROM) the non-members think that international donor organizations have less important role in cluster development, than the non-members in Serbia. This is not surprising since it was shown that there is a difference between opinion of the cluster members and non-members in Republic of Macedonia (FYROM) regarding this issue.

The non-members in Serbia think that Governmental institutions play more important role in cluster development than compared with the perception of non-members in Bulgaria and Republic of Macedonia (FYROM). In Serbia they also think that Chambers of Commerce and business associations are more active in facilitation of cluster initiatives.

8.6 Effectiveness of international cluster support organizations

With the question D7 the companies were asked to assess the overall assistance of the following cluster supporting organisations in their region/nation:

- United States Agency for International Development (USAID)
- German Organization for International Cooperation (GIZ)
- Italian Institute for Trade (ICHE)

The surveyed companies were given an opportunity to add other cluster support organizations, but none of the surveyed companies mentioned additional international organization that supports cluster initiatives

8.6.1 One way ANOVA Question D7

The summarized mean scores for all three countries presented in table 6.45 indicate that companies from both groups rate the support of USAID and GIZ as average, while they are not satisfied with the cluster support provided by ICHE. That is not surprising, since in all of the analysed countries ICHE provides very limited support to cluster initiatives.

Table 8.16 QD7 – Effectiveness of international cluster support organizations – cluster members vs. non-members

Mean scores cluster vs. non-members in all three countries					
D7 Please rate the overall support of the following int. organizations in your country		Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
United States Agency for International Development (USAID)	(R)	2.92	2.93	2.91	0.892
German Organization for Technical Cooperation (GTZ)	(R)	2.98	2.98	2.98	0.963
Italian Institute for Trade (ICHE)	(R)	3.52	3.66	3.37	0.074**

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference (R) – recoded – the question has been recoded because opposite Likert scale was used compared to other questions

8.6.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

In general there is no difference between opinion of the cluster members and non-members in summarized overview of selected countries, but when analysed separately, certain discrepancies are noticeable. Only in a case of assessing the overall support of ICHE the position of the cluster members slightly differs from the one of the non-members. Cluster members assess the support of ICHE as poor, while the non-members are more neutral assessing ICHE's support as average.

Cluster members vs. non-members by country

Table 8.17 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D7 Please rate the overall support of the following int. org. in your country	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOVA Cl vs. Nc
United States Agency for International Development (USAID)	2.69	2.83	2.54	0.253	3.07	2.70	3.43	0.005*	2.97	3.26	2.67	0.038*
German Organization for International Cooperation (GIZ)	2.94	3.06	2.82	0.356	3.40	3.16	3.63	0.047*	2.57	2.72	2.41	0.327
Italian Institute for Trade (ICHE)	3.08	3.19	2.96	0.410	3.84	3.65	4.02	0.095**	3.43	4.00	2.85	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Bulgaria

In Bulgaria there is no difference in perception of both groups.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) there is evident difference between cluster members and non-members. While cluster members rate higher the quality of services provided by USAID (mean score 2.70), non-members think that the overall support by them is closer

to being poor (mean score 3.43). Personal interviews, which were conducted in Republic of Macedonia (FYROM), showed that some of the cluster members were reluctant to criticize the international development organizations, since they were receiving support from them and therefore they rated their support higher in the questionnaire.

Serbia

In Serbia non-members rate the overall support by international organizations higher than cluster members. They rated USAID with 2.67 (between good and average), while cluster members' mean score is 3.26 (poor), and they rated ICHE with 2.85, while cluster members were much more critical and rated it with 4.00.

8.6.1.2 Comparison between countries (ANOVA country)

Table 8.18 Comparison between countries

D7 Please rate the overall support of the following int. org. in your country	**Comparison of both cluster members and non-members between countries**				**Comparison of cluster members between countries**				**Comparison of non-members between countries**			
	ANOVA Country (all SMEs)	**Post hoc analysis**			**ANOVA Country (cluster mem-bers)**	**Post hoc analysis**			**ANOVA Country (non-mem-bers)**	**Post hoc analysis**		
		BG vs. RM	**BG vs. Serb.**	**Serbia vs. RM**		**BG vs. RM**	**BG vs. Serbia**	**Serb. vs. RM**		**BG vs. RM**	**BG vs. Serb.**	**Serbia vs. RM**
United States Agency for International Development (USAID)	0.127	/	/	/	0.146	/	/	/	0.000*	0.000*	/	0.001*
German Organization for International Cooperation (GIZ)	0.000*	0.066**	/	0.000*	0.327	/	/	/	0.000*	0.001*	/	0.000*
Italian Institute for Trade (ICHE)	0.001*	0.000*	/	0.088**	0.027*	/	0.020*	/	0.000*	0.000*	/	0.000*

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of SMEs between countries

The companies from Republic of Macedonia (FYROM) are much less satisfied from received cluster support, compared to Bulgarian and Serbian ones. This is surprising since under the project Macedonian Competitiveness Activity, USAID has invested 11, 6

million USD in supporting cluster development in the period from 2002-2006. In spite of those heavy investments, the surveyed companies in Republic of Macedonia (FYROM) rate this support as average. They are in general less satisfied with the cluster support from donor organizations. Representatives of Macedonian companies are even more critical about GIZ and especially about ICHE (the mean score is 3.84, which means they provide poor services).

In Serbia both, the satisfaction of cluster members and non-members with support received from GIZ is higher than the one of the companies from Bulgaria and Republic of Macedonia (FYROM). It finding is not surprising since in the last eight years GIZ has been very active in supporting cluster initiatives in Serbia (especially automotive and ICT clusters), through covering administrative costs, salaries of cluster managers, promotional activities, trade fair participation, training courses, etc.

Comparisons of cluster members between countries

Regarding the perception about the role of Italian Institute for Trade (ICHE) in providing support for cluster initiatives, the only difference between the cluster members from the selected countries is between Serbia and Bulgaria. There is, however, no statistically significant difference.

Comparisons of non-members between countries

The non-members in Republic of Macedonia (FYROM) share the opinion that international donor organizations do not provide adequate support to clusters. They tend to assess the overall cluster support from international donor organizations towards poor, while the non-members in Bulgaria and Serbia assess it as average. This is in correlation with the findings from previous questions, which showed that the non-members in Republic of Macedonia (FYROM) are not very familiar or not well informed about the role of the international donor organizations in the cluster development process.

8.7 Perception about international cluster support organizations

In the question Q8 the surveyed companies were asked to what extent they trust the international cluster supporting organisations in relation of the:

- International cluster support organisations generally have the managerial and technical competence to initiate and develop industrial clusters
- International cluster support organisations will always meet their commitments with the business community in the cluster development process, and will usually do more than is formally expected
- International cluster support organisations are following the needs of business community, more than their own goals

8.7.1 One way ANOVA Question D8

The summarized answers of all companies in the three selected countries show that in general companies do not have very strong opinion about how much they trust international organizations. Their mean scores indicate that they neither agree nor disagree with the offered statements. Regarding the first alternative, however, their mean score is closer to 4.00, which means they agree that international cluster support organisations generally have the managerial and technical competence to initiate and develop industrial clusters.

Table 8.19 QD8 – Perception about international cluster support organizations – cluster members vs. non-members in all three countries

Mean scores cluster vs. non-members in all three countries				
D8 How much do you trust the international organizations in relation of the following?	Overall mean	Cluster mean	Non cluster mean	ANOVA Cl vs. Nc
Inter. Organ. generally have the managerial and tech. competence to support clusters	3.63	3.72	3.55	0.092**
Inter. cluster support org. always meet their commit. and even prov. more than expected	3.18	3.22	3.14	0.418
Inter. clust. support organ. follow the needs of the business, more than their own goals	3.06	3.11	3.01	0.331

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal difference

8.7.1.1 Cluster members vs. non-members

Cluster members vs. non-members in all three countries

In general in all of the selected countries, cluster members trust international organizations more than non-members do. The difference, however, is not statistically significant.

Cluster members vs. non-members by country

Table 8.20 Cluster members vs. non-members by country

Mean scores cluster members vs. non-members by country												
D8 How much do you trust the international organizations in relation of the following?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc
Inter. Organ. generally have the managerial and tech. competence to support clusters	3.61	3.70	3.53	0.335	3.40	3.52	3.29	0.169	3.90	3.94	3.85	0.611
Inter. cluster support org. always meet their commit.	3.32	3.43	3.22	0.269	2.88	2.92	2.84	0.547	3.36	3.35	3.38	0.847
Inter. clust. support organ. follow the needs of the business	3.06	3.17	2.96	0.233	2.90	2.94	2.86	0.262	3.22	3.23	3.21	0.936

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

In all of the selected countries individually cluster members trust international organizations more than non-members, but the difference in the mean scores is also not significant.

8.7.1.2 Comparison between countries (ANOVA country)

Results of the question D8 related to the mean scores of cluster members and non-members by country have been presented in the table 8.21

Table 8.21 Comparison between countries

Mean scores cluster members vs. non-members by country												
D8 How much do you trust the international organizations in relation of the following?	Bulgaria				FYROM				Serbia			
	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc	Ove-rall mean	Cluster means	Non-Cluster means	ANOV A Cl vs. Nc
Inter. Organ. generally have the managerial and tech. competence to support clusters	3.61	3.70	3.53	0.335	3.40	3.52	3.29	0.169	3.90	3.94	3.85	0.611
Inter. cluster support org. always meet their commit.	3.32	3.43	3.22	0.269	2.88	2.92	2.84	0.547	3.36	3.35	3.38	0.847
Inter. clust. support organ. follow the needs of the business	3.06	3.17	2.96	0.233	2.90	2.94	2.86	0.262	3.22	3.23	3.21	0.936

Keys: * $p < 0.05$ statistically significant difference ** $0.05 \leq p \leq 0.1$ marginal statistical difference

Comparison of all SMEs between countries

Regarding the managerial and technical competence of international organizations, companies in Serbia are more positive than Republic of Macedonia (FYROM) and Bulgaria.

Regarding meeting the commitments, the companies from Republic of Macedonia (FYROM) are more sceptical than those in Bulgaria and Serbia that international cluster support organisations always meet their commitments with the business community in the cluster development process.

Comparisons of cluster members between countries

The cluster members in Serbia believe more that international donor organizations have managerial and technical competence to support clusters, compared to the cluster members in Bulgaria and especially in Republic of Macedonia (FYROM), where they are more sceptical regarding this issue. It is evident that the cluster members in Republic of Macedonia (FYROM) are less satisfied from the cluster support from international donor organizations, since they are also not satisfied with the commitment and the level of meeting their expectations.

Comparisons of non-members between countries

The same level of trust in international donor organizations is shared by non-members in the three countries. The non-members in Republic of Macedonia (FYROM) are more skeptical regarding the capacities and commitment of international donor organizations than their counter parts in Bulgaria and especially Serbia.

8.8 Regression analysis, section D – cluster policy

The results from the regression analysis of all questions are presented in the summary Table 8.22. Regression analysis has not been carried out for the questions that were aimed for cluster members only, such as B4a.

Table 8.22 Regression analysis – section D, cluster policy

	Cluster members vs. non-members			
Questions	**Overall**	**Bulgaria**	**FYROM**	**Serbia**
Section D				
Question D1	.264	.200	.274	.338
Question D2	.122	.014	.243	.341
Question D3	.000	.124	.018	-.033
Question D4	.048	.103	.169	.058
Question D6	.042	.010	.140	.287
Question D7	.008	-.014	.060	.159
Question D8	.000	-.012	-.022	-.018

Keys: *The closer adjusted R-square is to 1.0 the better can one variable be predicted by the other. The closer is to 0.0, it cannot be predicted if a company is cluster member or not.

Based on the adjusted R-square values from all questions, presented in Table 8.22, similar findings have been demonstrated for companies from all three countries and for each country individually.

Cluster members vs. non-members in all of the countries

When regression analysis is applied to companies from all of the countries together, for the questions related to cluster policy, in the section D of the survey it is evident that the

values of the adjusted R-square are much closer to 0.0 than 1.0. Therefore it can be concluded that it is not possible to predict if a companies are cluster members or not based on their views on cluster policy issues.

Cluster members vs. non-members by country

Bulgaria

In Bulgaria the highest value of adjusted R-square is for the question D1 (.200), taking the awareness about cluster support programs as an independent variable. This value, however, does not provide enough justification for predicting the dependant variable, based upon the independent ones.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM), the companies from both groups demonstrate highest difference in responding the D1, related to the level of received information about the cluster support programs. However, the value of adjusted R-square, (.274), is not high enough a valid prediction to be made if a surveyed company is cluster member or not.

Serbia

The highest values of adjusted R-square are in Serbia for the question D1 (.338) related to the level of received information about the cluster support programs and D2 (.341), covering the familiarity with cluster support institutions. These are the highest values of adjusted R-square However, similarly to the other analysed countries, the values of adjusted R-for the whole survey, but still they are closer to 0.0 than to 1.0, which means that the responses between the cluster members and non-members do not differ to that extent, that based on the responses, could be predicted if a company is cluster members or not.

Based on the adjusted R-square values from all questions related to cluster policy, a final conclusion can be derived that it is not possible to predict if a company is cluster member or not, based on the value of the independent variables covered with the section D. This conclusion counts for all of the countries together and for each of them separately.

Chapter 9

The Chapter 9 presents the findings from the personal semi-structured interviews, which were conducted after survey questionnaires have been collected. The personal interviews were conducted with sixty representatives of the surveyed companies (thirty cluster members and thirty non-members), twenty in each of the selected countries, which represent 20% from the total number of the previously surveyed companies. They were chosen based on the level of fulfilment of the survey questionnaire, especially by the quality of responses on descriptive questions. Only those companies, which have not provided answer on descriptive questions in the questionnaire or in some questions, have chosen "other" as a variable, but without providing further details, were taken in consideration for an interview. Then, this was followed by applying stratified random sampling in both of the categories, cluster members and non-members in all of the selected countries.

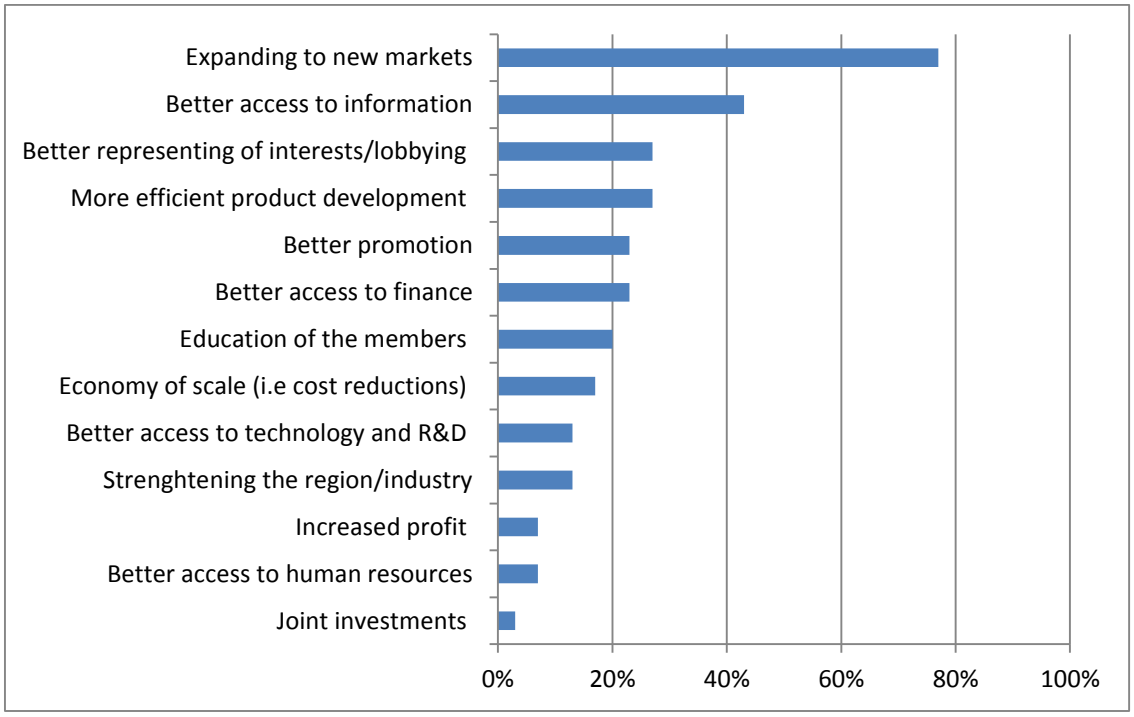
With representatives from the cluster members the interview focused around their expectations from entering into cluster relations and reasons for deciding to become a member of an organized business cluster, as well as around benefits that they have received as a result of being a cluster member or the level of meeting their expectations. Non-members were asked why they do not participate in any cluster initiative. Is it because they have made conscious decision to stay out of clusters and if yes, why, or they are other reasons, such as for example not being informed.

Both groups of interviewees, cluster members and non-members were given space to address some issues from the survey questionnaire that required further clarification. They were also asked to provide additional information about cases where when choosing between alternatives, they have stated "other", without providing more details. The interviewees were also given space to add anything regarding clusters and cluster development within their country, which was not covered in the questionnaire and they think is of importance.

9. Findings from the personal semi-structured interviews

Most of the findings from the survey have been confirmed during the personal interviews. The interviews, however, provided additional quality information, which has not been explicitly evident in the analyses of the questionnaires. In addition, the interviewees had opportunity to explain more precisely their responses. For example, when asked about stating the three most important reasons for joining the cluster initiatives, in the survey 67% of cluster members, pointed out factors, such as strengthening their cooperation, entering into joint activities, networking, improving competitiveness, without specifying how exactly they expect their business performance to be impacted. During the personal interviews they provided more concrete explanation which are presented in Figure 9.1

Figure 9.1 Reasons for joining clusters



Thirty cluster members were asked to state three main reasons for joining cluster initiatives, which made in total 90 statements. Twenty three of them (77%) were referring to expanding to new markets as the main expectation from clusters. The interviewees think that expanding to new markets would be easier if they join into clusters. The findings from the survey questionnaire indicate that the cluster members have not experienced increase of their competence, efficiency, productivity, cost effectiveness, profitability and innovativeness, which means they do not think that clusters have any influence on their performance. That leads to a conclusion that the expectation of expanding into new markets has not been met since, they have not become more competitive as a result of participating in clusters.

The second most frequently mentioned reason was access to information (43%). Since according to the findings from the survey, main benefit that cluster members receive from cluster is access to information it can be concluded that this expectation was met. This finding is in line with results from the research of Nishimura and Okamuro (2011) in Japan, who regard better access to information as an important output of cluster activities, since information may provide the cluster members with new opportunities to build networks with potential partners, although it does not provide a guarantee for increasing their R&D productivity.

Eight out of thirty cluster members (27%) see clusters as a vehicle for representing their interests against governmental institutions. They think they can better influence framework conditions if organized in clusters, which is in line with their statement in the same interviews that the bureaucratic environment and inefficient public administration as well as the insufficient support from the Government on both, central and local level, are one of the barriers for more efficient cluster development in Republic of Macedonia (FYROM) and Bulgaria. Heavy administrative regulation was also stressed in the survey questionnaire as bigger constraint for the business performance of the cluster members, than to the performance of the non-members.

The same number of interviewed cluster members thinks that exchanging ideas and joint collaboration should result into higher productivity and more efficient product development.

One quarter of the interviewees consider clusters as instruments for improving the access to finance and organizing more efficient promotional activities. All of the interviewees, who stated access to finance as a reason for joining clusters, are from Republic of Macedonia (FYROM), which confirms the findings from the questionnaire, where it was evident that they see clusters as an instrument for getting external finances. However, this is another expectation that has not been met, because according to the survey cluster members have not experienced any advantage over the non-members, with regard to the access of finance.

Education was stated by only 20% of interviewed managers as a reason for joining clusters. Contrary to the cluster literature, better access to technology and R&D, increased profit, joint investments were stated by only few cluster members, which leads to a conclusion that either, the companies do not have proper understanding about clusters or they do not believe that clusters in the selected countries produce same benefits as in the industrialized ones.

Comparing the findings from personal interviews and the survey questionnaire a conclusion can be derived that the clusters did not manage to meet the expectations of the cluster members, since they have produced marginal benefits only, mainly in a form of improving the access to information, business partners and supporting institutions, which have not translated, into increased productivity, higher level of innovation capacity and improving the competitiveness of its members. This finding is in contrast with the findings from the cluster literature of the developed countries (Porter, 1998).

According to twenty three out of thirty (77%) interviewed cluster members in all three countries one of the reasons for such reality, might be the fact that the cluster development is in its very initial stage and it is too early concrete results to be expected. This position was especially evident in Serbia, where all of the interviewed cluster members companies

without exemption, confirmed this statement, which confirms the findings from the literature that stage of development of cluster influence the level of its performance (Jircikova, et. al, 2013).

In addition to the initial stage of their life cycle, some of the interviewees stressed that another reason for expectations not being met, is a lack of understanding about the cluster concept, not only among the majority of the cluster members, who expect to receive benefits without investing their time and resources, but also from the cluster manager. Contrary to the findings from the cluster literature, where cluster managers in clusters dominated by small and medium-sized firms, performed a function of a facilitator of inter firm cooperation and also fulfil the role of an organiser by arranging, for example, networking events, seminars, and projects within the cluster, almost two thirds of the interviewed representatives of the companies (60%) stated that among the cluster management, there is a lack of understanding of clusters as a business strategy, which results in creating perception that they operate as non-profit organizations, looking for external financial sources for financing their activities.

In addition, they all agree that most of the cluster benefits for the time being have been experienced by the cluster management only, through knowledge transfer, study visits, without being able to transfer them further down to the cluster members as final beneficiaries. In most cases the monitoring system concentrate on the implemented cluster activities, without taking in consideration impact for the cluster members, measured through the selected performance measurement indicators which were used in the survey.

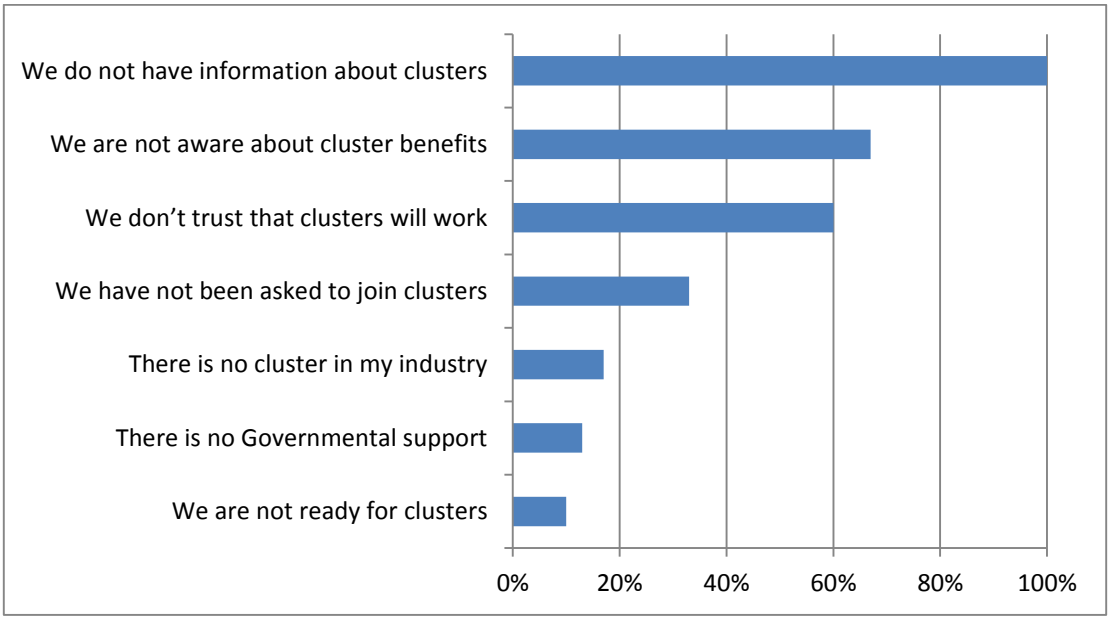
This correlates with the finding from the quantitative survey that cluster members do not think that they receive significant positive effects from their clusters. In a long-run such a perception of the cluster members might negatively influence their motivation and commitment to invest their resources for implementing joint cluster activities. Since according to the previous findings the cluster members believe more than non-members in creating synergies, by working together, losing that confidence might create long term consequences. It might be seen as a missed opportunity for converting the non-members,

which according to the personal interviews do not have confidence in working together. For that purpose impact based monitoring system was suggested. One of the conclusions that can be derived for policy makers is that due to importance of cluster management especially in the early stage of cluster development, intensive measures for capacity building of cluster management are needed, aiming at improving their business and managerial skills.

In order clusters to produce agglomeration effects, as described in the literature of the industrialized countries, wider membership base is essential. Bulgarian representatives of the cluster members stated that even in the economic sectors with high geographical concentration, clusters consist of few members only, who do not represent their industry, neither by the number of involved companies, not by the size of economic activity measured through economic indicators, such as contribution to the regional/national GDP or value added.

The non-members were asked to state three main reasons for not joining cluster initiatives and the results are presented in Figure 9.2.

Figure 9.2 Main reasons for not becoming a cluster member



All of the thirty interviewed non-members stated that they do not have enough information about cluster development in their country. Two thirds of them also stated

that although in principle they know what clusters are, they do not know what to expect from them, since they do not possess sufficient knowledge and are not familiar with the cluster benefits. This is in line with findings from the survey questionnaire where lack of awareness about clusters was stated by the non-members as a main barrier for cluster development.

Eighteen out of thirty non-members (60%) indicated that they do not believe in such form of cooperation, mainly because of the bad experience from the previous centrally planned system, where business associations or other types of institutionalized cooperation have been used for representing interests of limited number of companies. They also stressed that they do not believe that companies which are competitors have capacities to cooperate with each other. Low cooperation culture and lack of trust was also identified in the questionnaire as one of the most important barriers for cluster development.

One third of the interviewed non-members mentioned the fact that they have not been asked to join any cluster initiative. Taking in consideration, that they do not have enough information about clusters this statement is not surprising, but it also demonstrate a lack of proactive attitude, where waiting to be invited is preferred instead of initiating cluster cooperation. Four interviewees (13%) mentioned lack of governmental support, which can also be related to passive wait for external push. While five representatives of the non-members (17%) stated that there was no cluster established in their sector, in the period when interview took place, three of them (10%) identified internal motivations for deciding not to enter into cluster relations. According to them, developing partnerships and entering into more intensive cooperation requires higher stage of company development and since they are facing restructuring challenges, they do not feel they are ready for the cluster approach.

Chapter 10

This chapter will provide discussions based on the analysis of the survey questions and will present the Cluster model. The discussions will be divided in three subdivisions – Clusters – preconditions and benefits, Clusters and competitiveness and Cluster policy. Each of the subdivisions will follow the similar structure as in the previous Chapters, describing the relations between:

- Cluster members vs. non-members in all three countries
- Cluster members vs. non-members by country
- The selected countries

In the last part of the chapter, the hypothetical Cluster model has been developed as a conceptual framework to highlight the key themes underlying the study. It provides visual presentation of the correlation between the preconditions for cluster development, access to resources, cluster benefits and competitiveness as a final objective of cluster activities, as a summary of the literature review. After presenting the basic Cluster model, which' elements are based on the findings from the literature and personal interviews before conducting the survey, the mean scores of cluster members vs. non-members in all of the selected countries will be presented through the Cluster model, aiming at examining if being a cluster member or not, makes a difference. It will be followed by similar visual presentation about the difference between the cluster members and non-members, but on a country level.

10. Discussion

10.1 Clusters - preconditions and benefits

The surveyed companies, both cluster members and non-members, rate cooperation, trust, business climate and governmental support as important preconditions for cluster formation. They highlighted the existence of trust among the companies, as the most important factor, while they consider the critical mass of SMEs and geographical

proximity as the least important factors. In general they confirm the findings from the literature that certain preconditions are supposed to be in place when establishing clusters, but what is interesting is that contrary to the literature geographical proximity is not considered to be important precondition.

The most significant barriers for cluster formation in all three countries are the lack of awareness about clusters and lack of cooperation and trust. On a scale between one and five, both of them were marked slightly above four, which means they are considered as important. Lack of awareness as a barrier could be an indicator for cluster policy makers in all of the analysed countries, to design the intervention measures around providing information and organizing awareness building events, such as conferences, round tables, info days etc. In addition cluster policy makers should focus on designing and implementing activities aimed at promotion trust and improving cooperative behaviour between the companies.

Cluster members vs. non-members

The cluster members in all three countries rate all of the mentioned preconditions for cluster development as important, while the non-members consider the critical number of SMEs and geographical concentration as neither important nor not important. The difference might be a result of the fact that cluster members are more familiar with the cluster concept and can therefore better recognise the given variables as important factors for cluster development. The possessed knowledge about the benefits that cluster produce might be a reason why they have joined clusters at first place, but also that they have gained a lot of information about the clusters by participating in awareness building campaigns and being involved in training measures delivered by the cluster support institutions.

When comparing the cluster and non-members, in all of the selected countries the cluster members rate all of the barriers for cluster formation, except one, higher than non-members, which means they consider them as more important. The only barrier that is rated higher by non-members than cluster members is the small size of the market which as explained in Chapter 5, negatively influences specialization.

The cluster members consider lack of cooperation and trust as the most important barriers for cluster development, while according to the non-members the most important factor that prevents companies to organize themselves in cluster organizations, is low level of awareness about the cluster concept. It should be noted, however, that this difference is not significant, which means that cluster members and non-members share the same view regarding the barriers for setting up clusters. Based on this, a conclusion can be derived that the decision not to become a cluster member has been made, not because of some particular barrier, but because of pure business motives.

The cluster members in all of the selected countries do not have significantly better relations with other cluster members than with non-members and their decision to enter into business relations with a specific company does not depend on the fact if the company is cluster member or not. This contradicts the findings of Niu et al. (2012), who argue that inter-organizational trust may be strengthened due to reduced proximity and better information flow within a cluster.

Cluster members vs. non-members by country

Bulgaria

Cluster members in Bulgaria think that lack of awareness about clusters is big barrier for creation of clusters. Lack of awareness about cluster benefits, could be an explanation not only for cluster formation, but for the small size of clusters in Bulgaria. In some cases cluster management considers clusters as a closed club, imposing high entry barriers for new members, from the fear that more members would mean less benefit for each of them individually, which is opposite from cluster theory about agglomeration effects. In Bulgaria the cluster members also perceive culture of cooperation as more important barrier compared to non-members, probably because in most cases they have already entered into cooperative relationship between each other even before officially setting up the cluster. In general the size of the clusters in Bulgaria is very small, with average number of between 7-10 cluster members, characterized by intensive cooperative relations. Bulgarian cluster members agree that they cooperate more easily with other

cluster members than with non-members. This might be a result of the fact that most of the interviewed cluster members participated in the EU Phare Cluster Grant Scheme and Technical Assistance (so called Cluster II project) implemented in 2008-2009, under which they were provided with significant financial support exclusively for implementing joint activities. Mutual cooperation and implementation of joint cluster activities were key preconditions for being eligible for applying to the Cluster grant scheme. The fact, however, that after several years of completion of the project there is almost no example of sustainable impact of the implemented joint activities, indicates that the cluster cooperation was influenced by external factors and was not a result of agglomeration effects, which are described in the literature.

Republic of Macedonia (FYROM)

The cooperation culture has been also ranked highest by the cluster members in Republic of Macedonia (FYROM), but the biggest difference between the cluster members and non-members is in the perception about the importance of the geographical proximity of the companies. The cluster members think that geographical proximity maters and create some additional benefits. In Republic of Macedonia (FYROM) cluster members, contrary to the findings from the literature, do not have better relationship or are not willing easier to enter into joint activities with other cluster members, than compared to the non-members.

Serbia

In Serbia the cluster members think that the governmental support is the most important precondition for cluster development. This might be a result of very high dependence of the Serbian clusters on the governmental cluster schemes that have been implemented in the last few years. Top down approach has been particularly evident in automotive cluster, where there was an explicit demonstration of political will to support the cluster, due to the huge significance of the automotive sector for the Serbian economy.

Regarding the barriers for cluster development in Serbia all of the mentioned barriers were rated higher by cluster members than by non-members. The difference is especially evident in the case of the perception about the legal framework, lack of cooperation and

trust and inadequate cluster support policy. This is surprising since it brings to a conclusion that cluster members have decided to join clusters in spite of the stated barriers, while the others who do not see the barriers as that important issue, have decided not to participate in the clustering process. One explanation for this might be that the cluster members are more familiar about the barriers, since they are supposed to be more informed about clusters in general. They are also more familiar with the existing legal framework, because it directly influences the registration of clusters and they are in a better position to assess the effectiveness of cluster policy measures.

Similar to Republic of Macedonia (FYROM), in Serbia cluster members, contrary to the literature review, do not have better relationship or are not willing easier to enter into joint activities with other cluster members, than compared to the non-members.

Comparisons between countries

The companies in Republic of Macedonia (FYROM) rate critical mass of SMEs as more important factor than the companies in Bulgaria. This difference might be due to the smaller size of the country, where the number of companies by sector is much smaller compared to Bulgaria and Serbia. The evidence shows that when there is a critical mass of related industries in certain region, they tend to produce positive effects, through generating higher incomes and rates of growth (Spencer et al., 2010).

There is significant difference between Bulgaria and Serbia regarding the cooperation culture as a precondition for formation of clusters. In Bulgaria the questioned companies rate the existence of cooperation culture as much more important than their counterparts in Serbia.

Regarding the importance of Governmental support, perception of the companies in Serbia differs from the one in Bulgaria in Republic of Macedonia (FYROM). They consider this factor as more important than compared to companies in other two countries. The difference between Bulgaria and Serbia might be caused by differences in their cluster support policies and by different criteria for selection of clusters to be supported. In Bulgaria for selection of clusters, the so called GEM + model has been used, which is

modified version of Groundings-Enterprises-Markets (GEM) model developed by Padmore and Gibson (1998) with an attempt to quantify the level of competitiveness by rating method. Under one of the criteria in the GEM + methodology the clusters had to provide evidence about their previous cooperation in order to be eligible for cluster grant scheme. In Serbia the cluster support from the Ministry of Economy and Regional Development is more activity based, while the support from cluster projects, such as Support of Enterprise Competitiveness and Export Promotion (SECEP) depends on potential competitiveness of the cluster, management implementation capacity and its significance measured in terms of contribution to the overall economy. The logic of the model used by SECEP is that the technical assistance can be provided only to clusters that are competitive, have management that can implement steps to improve the cluster and are significant enough to provide a return in terms of sales and employment that justifies the investment of MoERD.

Serbian companies are the most satisfied with the cluster support policy, because of two possible reasons. From one aspect Serbian companies might be really experiencing benefits from the cluster support policy, but on the other hand their answers might be biased, being influenced by the fact that they are highly dependent on financial support that they receive from the Serbian Ministry of Economy and Regional Development (MERD).

The awareness about clusters, in Bulgaria is on the lowest level, which is surprising having on mind the opportunities for support of clusters under the EU structural funds (OP Competitiveness). In addition Bulgarian companies are considering lack of cooperation and trust as more important barriers, than their counterparts in Republic of Macedonia (FYROM) and Serbia.

Serbian companies are the most satisfied with the cluster support policy, since they rated that variable lower than companies in the rest of the two countries. The reason for that might be twofold. From one aspect Serbian companies might be really experiencing benefits from the cluster support policy, but on the other hand their answers might be biased and influenced by the fact that the cluster members are highly dependent on

financial support that they receive from Serbian Ministry of Economy and Regional Development (MERD).

With regard to the discussed barriers for cluster development, the most significant difference between the perception of companies in the three countries is regarding the variable "Small market does not allow companies to focus on core competencies". The post hoc analysis indicates that there is a difference between Republic of Macedonia (FYROM) and Bulgaria and Serbia. It is not surprising since it is the smallest market among them. This barrier was even not considered in the questionnaire in the beginning of the research, because the literature does not provide any evidence of that, but it was additionally added since the companies from Republic of Macedonia (FYROM) which have been interviewed before the survey, stressed that in small size market it is very difficult to survive through specialization and the existence of specialised companies attracts potential cluster participants, which then generate additional pressure for further specialisation (Preissl and Solimene, 2003). This finding is unique contribution to the field of cluster development, since the size of the market has not been mentioned in the literature as a factor (neither positive nor negative) for setting up cluster initiatives.

10.2 Clusters and competitiveness

According to the average mean scores, both groups of companies in all three countries (regardless if they are cluster members or not) in general tend to disagree with a fact that being a cluster member or not influence their access to finance, skilled labour, raw materials, technology and customers. The same conclusion can be derived regarding the access to suppliers.

Cluster members vs. non-members in all three countries

There is significant difference in perception between the cluster members and non-members about the influence of factors that act as constraints to their performance. They all rate the proposed factors as bigger constraints to their business compared to the non-members, but the difference is especially evident in a case of administrative regulation, access to finance, lack of skilled labour and infrastructure. This might be surprising,

because based on the literature, one would expect that when organized in clusters the cluster members could better cope with the constraints to their business performance. On the other hand, the fact that most of the surveyed cluster members have been members for less than a three years, indicates that they decided to organize themselves into clusters or to become a members of already established clusters because of being more affected by the proposed constraints (lack of skilled labour, access to finance, implementing new technologies, implementing new forms of organisation, quality management, administrative regulations and infrastructure). This finding shows that among the cluster members there is higher awareness and understanding that working together they can be more successful in dealing with their business challenges. For example entrepreneurs in transition countries should also recognize the importance the networking with other entrepreneurs in transition countries, also increases the likelihood of accessing finance, especially informal venture capital (Szerb et al., 2007).

Cluster members do not think that they receive significant positive effects from their clusters. Main benefit that cluster members receive from cluster is access to information and to some extent access to partners and supporting institutions. This finding is in line with results from the research of Nishimura and Okamuro (2011) in Japan, who suggest that even though participation in the cluster alone does not generally lead to higher R&D productivity, the participants may obtain valuable information on potential partners through the support of the cluster projects. They regard better access to information as an important output of cluster activities, since information may provide the cluster members with new opportunities to build networks with potential partners. Klumbies et al. (2011) confirm the importance of information, underlining that it is not the technological knowledge, but rather the frequent exchange of information, like market information, that is most important for the generation of economies of proximity. However, it is evident that they do not think that they have better access to raw materials and skilled labour, which are one of the most important benefits that clusters produce according to the literature and experience from industrialized countries. It can be concluded that the benefits produced by the clusters in transition countries in SEE do not appear as a result of agglomeration effects, which is the case in countries where clusters are more of a geographical phenomenon.

Comparing with experiences from industrialized countries (Porter, 1998) the cluster members in the selected countries in do not see any positive correlation between being a cluster member and having better access to suppliers. They agree that the decision to buy from their suppliers is driven by business motives only, regardless if they are cluster members or not. Cluster members also do not enter into business relationship with a financial institution, just because they are cluster member.

The results to question C1 - *as a result of participating in clusters do you perform better, especially regarding competitiveness, efficiency, productivity, cost effectiveness, profitability and innovativeness* - indicate that benefits in terms of better access to information or business partners or business support organizations, have not been materialized through increasing their competence, efficiency, productivity, cost effectiveness, profitability and innovativeness, since the SMEs in all three countries do not think that clusters have any influence on their performance. They are neither more competitive as a result of being cluster members, nor more competitive as a result of not being cluster member. Being a cluster member or not does not influence their competitiveness.

At the same time the companies which are not involved in cluster initiatives, do not see any disadvantage for "being out of the game". This is very interesting finding, because this question is directly related to the research goals and could indicate that, contrary to the literature for industrialized countries (Paniccia, 2000, Camison, 2003, Spencer et al., 2010, Titze et al., 2011, Sanchez and Omar, 2012), the types of clusters that exist in SEE do not affect the performance of participating SMEs.

Using business performance indicators does not depend on the fact that a company is cluster member or not and there is no difference in the business performance of the cluster members and non-members in the period 2008-2010. Being a cluster member or not does not significantly affect the business performance of the company according to this research.

Also contrary to literature and experiences of countries where clusters as a geographical phenomenon generate significant benefits (Porter, 2000, Pouder and St. John, 1996, Krugman, 1991, Paniccia, 2000, Camison, 2003) there is no evidence that clusters contribute to improving the competitiveness of SMEs in the analysed countries, since the mean scores for offered alternatives are almost same between the cluster members and non-members. It can be concluded that the clusters in transition countries in SEE produce only marginal positive effects in a form of improving the access to information, business partners and supporting institutions, which contrary to Porter's (1998) findings do not yet translate into increased productivity, higher level of innovation capacity and improving the competitiveness of its members.

Cluster members vs. non-members by country

Bulgaria

When constraints for business performance are taken in consideration in Bulgaria the cluster members see administrative regulations and access to infrastructure as bigger constraints compared to the non-members from the same country. However, both groups agree that access to finance and lack of adequate human resources are the biggest constraints. The difference between cluster members and non-members regarding R&D investments is most evident in Bulgaria. It might be caused by the fact that under the Cluster Grant scheme supported by the Ministry of Economy, Energy and Tourism in 2009, such cluster activities related to R&D were supported. In Serbia the Ministry of Economy and Regional Development started to support innovative cluster activities, especially related to R&D in 2011.

Regarding the cluster benefits, cluster members in Bulgaria have better access to information (4.26), business support institutions, business partners and financial institutions, compared to non-members. It can be concluded that in Bulgaria the cluster members receive some benefits which are not available to the non-members.

Republic of Macedonia (FYROM)

Regarding the constraints to business performance the difference between cluster and non-members is most evident in Republic of Macedonia (FYROM), especially with

regard to access to finance, and lack of skilled labour. It might be not surprising, since when interviewed, the cluster members pointed out that one of the biggest expectations from their participation in clusters is having better access to finance. Basically they see clusters as a "door opener" to additional financial resources, which are mainly provided by donor organizations through cluster projects. When competitiveness indicators were considered, export turnover and pre-tax profit of cluster members in Republic of Macedonia (FYROM) is higher than compared to non-members. According to direct interviews with some of the surveyed cluster members, this is a result of business opportunities developed at trade fairs which were jointly organized with other cluster member and were supported mainly by international donor organizations, such as USAID and GIZ.

Serbia

Considering the constraints for business performance in Serbia there is a difference between the perception of cluster members and non-members about access to finance and implementation of new technologies. Both are considered bigger constraints by cluster members, compared to non-members. After the survey personal interviews were conducted with part of the cluster members and they confirmed the assumption that cluster members expect to have more success with tackling their problems by working together.

Comparisons between countries

Regarding the skilled labour as a constraint for business performance there is a difference between SMEs in Bulgaria and Serbia and Bulgaria and Republic of Macedonia (FYROM). In Bulgaria they see the lack of skilled labour as a constraint, while in Republic of Macedonia (FYROM) and especially in Serbia this problem is not so obvious. In contrast, Klumbies et al., (2011) see the improved access to employees as one of the secrets of the performance enhancing effects of clusters. According to them hiring new employees may also be easier in clusters, as word-of-mouth recommendation of specific employees, is certainly common in the local social networks of cluster firms. In Bulgaria the access to finance too, is considered as bigger constraint compared to Republic of Macedonia (FYROM) and especially Serbia. Regarding the administrative regulations,

(bureaucracy) the Serbian companies find it serious constraint than companies in Republic of Macedonia (FYROM) and Bulgaria.

While the access to finance was considered as big constraint for cluster formation, Bulgarian companies stated that they have better access to financial resources, compared to cluster members in Republic of Macedonia (FYROM) and Serbia. The same can be concluded for the supporting institutions and information, although the difference is not that evident as with the access to financial resources. This is not surprising since in Bulgaria the cluster members have access to significant financial resources through Cluster grant schemes, financed by the EU Phare Programme.

According to the cluster members in Serbia the clusters help them to expand their markets and have better access to customers, compared to Republic of Macedonia (FYROM), where cluster members do not see any particular benefit in that area. It can be concluded that cluster activities in Republic of Macedonia (FYROM) are more focusing on providing soft assistance measures, such as improving access to information and coordination with other business support institutions, while in Serbia they are more aiming at expanding on new markets and producing some commercial benefits for the companies.

In Republic of Macedonia (FYROM) companies have had very high expectations from clusters before joining in, but after becoming cluster members in most cases they realize that their expectations have not been met. It is evident that compared to cluster members in other analysed countries the cluster members from Republic of Macedonia (FYROM), are least satisfied with the extra benefits they receive as a result of being cluster members.

10.3 Cluster policy

In all three countries in general the companies are not very familiar with the role of institutions that provide direct or indirect support of clusters. The companies partially are informed only about their Ministries of Economies, and for the rest of the institutions they have heard about them, but they are not familiar with their role and responsibilities. It indicates that there is a lack of information, which might be caused by the insufficient

initiative by SMEs actively to search for information, by the inefficiency in promotion of cluster support programs by the Governmental institutions (both on national and regional/local level) to promote their cluster support programs in an effective and efficient manner, or by the combination of both. In all three countries companies are only partially familiar with consultancy companies, which indicate they rarely use their services.

Representatives of the companies from all of the selected countries do not consider any of the organizations (international organizations, governmental agencies, business associations and chambers of commerce) as dominant facilitator of cluster interactions. That leads to a conclusion that there is no specific pattern regarding this question and in various clusters different institution might play important role as a facilitator of cluster interactions.

In general in all three countries the companies are not satisfied with the coordination among cluster support institutions, staffing and the intensity of political and financial support of clusters. In each of the countries different institutions might play important role as a facilitator of cluster interactions. Companies from all countries rate the support of USAID and GIZ as average, while they are not satisfied with the cluster support provided by Italian Institute for Trade (ICHE). That is not surprising, since the cluster support activities of ICHE are very limited in all of the analysed countries. In general companies do not have very strong opinion about how much they trust international organizations.

Cluster members vs. non-members in all three countries

Cluster members are much more informed about cluster support programs and institutions, than companies which are not cluster members. This is both, cause and consequence... Being informed about the benefits that cluster support programs are producing (or at least promising to produce) for cluster members, influence the decision of a company to join cluster initiative. On the other hand, when a company becomes a cluster member it has access to more information about cluster support organizations and their programmes. Conclusion from this is that policy makers should pay more attention

on increasing the awareness of companies which are not members of clusters about cluster support programmes.

Cluster members vs. non-members by country

Bulgaria

On national level In Bulgaria the cluster members are more familiar with the cluster support programs of the Ministry of Economy, Energy and Tourism, Program for supporting competitiveness, and Program for export promotion, than their non-member colleagues. On regional/local level the cluster members are also more familiar with the services offered by Regional Enterprise Support Centres and other SME Centres.

Republic of Macedonia (FYROM)

In Republic of Macedonia (FYROM) cluster members see the International organizations as a very important facilitator of cluster relationship, compared to non-members, who think they rarely play that role. It might be a result of insufficient information, since most of the clusters in Republic of Macedonia (FYROM) have been initiated by international organizations and as direct beneficiaries of cluster support programs and projects, cluster members are more familiar with their role and services. In Republic of Macedonia (FYROM) there is evident difference between cluster and non-members. Personal interviews, which were conducted in Republic of Macedonia (FYROM), showed that some of the cluster members were reluctant to criticize the international development organizations, since they were receiving support from them and therefore their responses might be biased in rating their support in the questionnaire. However in general in Republic of Macedonia (FYROM) the significant support from international development organizations, have not been very efficient and have not met the expectations of companies regardless of their status as cluster members or not.

Serbia

The difference between level of information of cluster members and non-members is most evident in Serbia. On National level in Serbia cluster members are more familiar with the Ministry of Economy and Regional Development, Program for supporting

competitiveness, Program for export promotion. On regional and local level Regional Enterprise Support Centres, other SME Centres and Business incubators have been recognized as important institutions in cluster support process.

In Serbia cluster members see business associations as less important than non-members with regard of facilitating cluster relations. This might be caused by the fact that they are aware that the governmental institutions such as Ministry of Economy and Regional Development play that role. The non-members rate the overall support by international organizations higher than cluster members. That could mean that non-members assume that cluster members receive much bigger benefits from international organizations, than they actually receive in reality.

Comparisons between countries

In Bulgaria the mean score of the familiarity with the Ministry of Economy, Energy and Tourism is highest compared to Republic of Macedonia (FYROM) and Serbia, which might be result of the fact that MEET provides significant support for clusters. For example in Bulgaria in 2003-2004 the project the Project 'Introduction of Cluster Approach and Establishment of a Pilot Cluster Model' was implemented by Phare focusing on the cluster approach and establishing the cluster model. The main outputs of the project were the National Cluster Strategy and the Action plan to implement it that outlined a process of clusters development for the following 6 years, including cluster support, training, networking, capacity building of agencies and NGOs, support to create cluster coordinators and a measurement/evaluation regime. In 2008-2009 the EU Phare Cluster Grant Scheme and Technical Assistance (so called Cluster II project), was seen as a second stage in the development of "competitive clusters" in Bulgaria. To address these challenges this cluster project focused on increasing the level of competitiveness and innovation in the SME sector as a basis for sustainable and balanced development of the Bulgarian economy.

Bulgarian cluster members are more familiar than cluster members in Republic of Macedonia (FYROM) and Serbia about Program for support of competitiveness, which might be explained by the fact that as an EU country Bulgaria has better access to EU Competitiveness programs, compared to Republic of Macedonia (FYROM) and Serbia

where Competitiveness subcomponent of IPA III has not been started yet. The finding that in both Bulgaria and Serbia companies are more familiar with cluster support institutions on regional and local level, compared to the companies in Republic of Macedonia (FYROM), might be explained with the fact that both are bigger countries where clusters are more of a regional phenomenon, while in Republic of Macedonia (FYROM) almost all of the cluster initiatives have been developed on national level.

Non-members in Republic of Macedonia (FYROM) are informed partially about municipalities' LED offices, compared to non-members in Serbia and Bulgaria, which have only heard about their existence. This might be caused by the intensive support that LED offices received from international donor organizations (UNDP, USAID, GIZ).

In Bulgaria companies are more satisfied with the financial support they receive from cluster support organizations, compared to Republic of Macedonia (FYROM) and Serbia. In Republic of Macedonia (FYROM) companies, both cluster and non-members disagree that financial support has been provided in consistent and sustainable manner. Dissatisfaction with financial support is especially evident by cluster members in Republic of Macedonia (FYROM). With annual support of only 40.000 EUR in 2010 and 2011 it is not surprising. For comparison, in Bulgaria under the Cluster II Project in 2008-2009 the clusters which have qualified for the grant scheme, received financial support in a value of max 250.000 EUR each.

Also the companies in Bulgaria think that human resources in the cluster support institutions are more appropriate or have better capacities, when compared to companies in Republic of Macedonia (FYROM) and Serbia. This might be a result of intensive capacity building measures aimed at Bulgarian Ministry of Economy, Energy and Tourism and Bulgarian SME support agency under the EU Technical Assistance (so called Cluster II project), implemented in 2008 and 2009.

In Serbia and Republic of Macedonia (FYROM) international organizations play more important role in facilitation of inter-cluster relationships. Since Bulgaria is member of EU the presence of international economic development organizations, such as USAID, UNDP and GIZ, is not as significant as compared in Republic of Macedonia (FYROM)

and Serbia. In Bulgaria also the Chamber of commerce rarely facilitates the interactions between the cluster members. Business associations are more active in that role.

The Governmental organizations in Serbia and Bulgaria support clusters development to a greater extent, compared to Republic of Macedonia (FYROM). In Serbia, most of the cluster initiatives have been set up by top-down approach with Ministry of Economy and Regional Development being in a driving seat. In Bulgaria, the Governmental organizations such as Ministry of Economy, Energy and Tourism and Bulgarian Agency for SME promotion (BASME) provide most of the financial support and therefore also play very important role as facilitator of cluster interactions. The role of the Chambers of Commerce is not so big in Bulgaria and Republic of Macedonia (FYROM) compared to Serbia. In Serbia there is a process of transformation of Chambers of Commerce in which the membership will cease to be mandatory starting from 2013. Therefore some of them try to support cluster initiatives as one of the ways of offering more quality services for attracting new members and as a way of supporting their regional economies. That is a case for example with Chambers of Commerce in the cities of Kragujevac and Nis in Serbia, who are the main initiators of setting up automotive clusters in their regions, and they act as a main facilitator of cluster interactions.

Regarding the cluster support the companies from Republic of Macedonia (FYROM) are much less satisfied, compared to Bulgarian and Serbian SMEs. This is surprising since under the project Macedonian Competitiveness Activity, USAID has invested 11, 6 million USD in supporting cluster development in the period from 2002-2006. In spite of this substantial financial support, according to the mean score the companies in Republic of Macedonia (FYROM) rate this support as average. The companies in Republic of Macedonia (FYROM) are in general less satisfied with the cluster support from donor organizations. They are even more critical about GIZ and especially about ICHE.

In Serbia both, cluster members and non-members are more satisfied with support received from GIZ than companies from Bulgaria and Republic of Macedonia (FYROM), which is not surprising since in the last eight years GIZ has been very active in supporting clusters, especially automotive and ICT clusters, through covering administrative costs, salaries of cluster managers, promotional activities, trade fair participation, training

courses, etc. The cluster members in Serbia believe more that international donor organizations have managerial and technical competence to support clusters, compared to the cluster members in Bulgaria and especially in Republic of Macedonia (FYROM), where they are more sceptical regarding this issue. It is evident that the cluster members in Republic of Macedonia (FYROM) are less satisfied with the cluster support from international donor organizations, since they are also critical about the commitment and the level of meeting their expectations.

In Serbia the cluster members stated that Business associations have more important role in facilitation of cluster relationships than in Republic of Macedonia (FYROM). This is contradictory to previous findings, which shows that clusters in Serbia have been mostly top-down driven.

Regarding meeting the commitments, the companies from Republic of Macedonia (FYROM) are more sceptical than those in Bulgaria and Serbia that international cluster support organisations always meet their commitments with the business community in the cluster development process. It shows that in Republic of Macedonia (FYROM) the huge support from international development organizations, have not been very efficient and have not met the expectations of companies regardless of their status as cluster members or not.

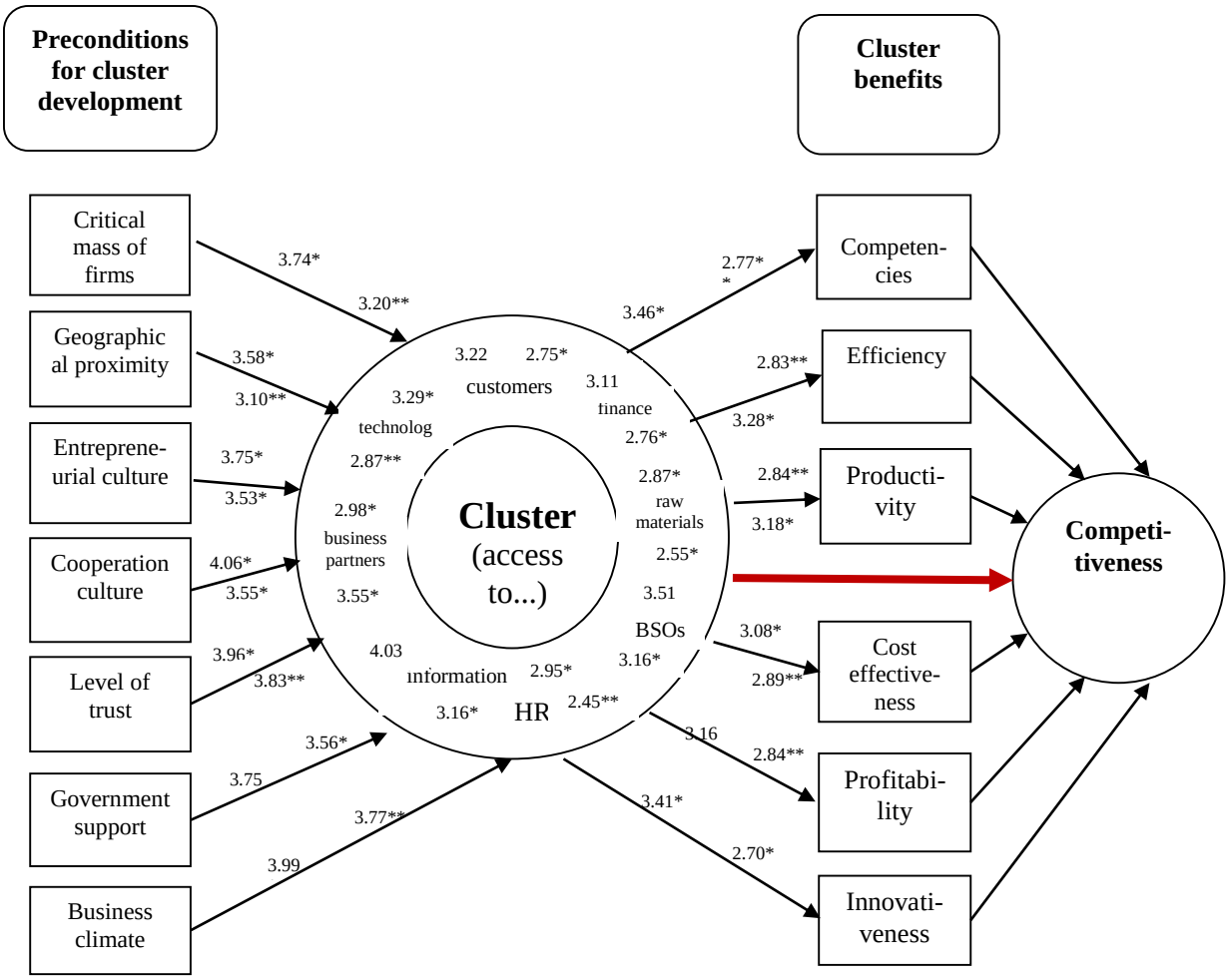
10.4 Conceptual Cluster Model based on the questionnaire

The hypothetical Cluster model has been developed as a conceptual framework to highlight the key themes underlying the study.

Cluster members vs. non-members in all three countries

In the Figure 10.1 the mean scores of cluster members vs. non-members in all of the selected countries will be presented aiming at examining if being a cluster member or not, makes a difference.

Figure 10.1 Cluster model - Mean scores of the cluster members vs. non-members in all three countries



*mean scores – cluster members

**mean scores – non-members

The model presents the responses of the following questions:

Question B3 - For assessing the importance of the necessary preconditions for cluster formation the surveyed companies were asked to choose from the alternatives presented in the model. The mean scores have been calculated based on the following Likert scale.

(please rate from 1 = not at all important, 2 = not important, 3 = neither important not important, 4 = important, to 5 = very important)

Question C1 - The question C1 aims at exploring if cluster members as a result of participating in clusters do perform better, especially regarding competitiveness, efficiency, productivity, cost effectiveness, profitability and innovativeness. The mean scores have been calculated based on the following Likert scale.
(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Question C3 - The question C3 aims at exploring if, as the cluster literature suggests, the cluster members have better access to necessary resources and support needed. The mean scores have been calculated based on the following Likert scale.
(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

When comparing the cluster and non-members in all three countries, the cluster members rate all the preconditions for creating clusters as more important than non-members. All of the mean scores are higher compared to the mean scores of companies that are not cluster members. They rate all of the factors as important, while the non-members consider the critical number of SMEs and geographical concentration as neither important nor not important. The difference might be a result of the fact that cluster members are more familiar with the cluster concept and can therefore better recognize the given variables as important factors for cluster development. The possessed knowledge about the benefits that cluster produce might be a reason why they have joined clusters at first place, but also that have gained a lot of information about the clusters participating in awareness building campaign and being involved in training measures delivered by the cluster support institutions. The cluster members rated the culture of cooperation highest, while the non-members consider the trust as a most important precondition for cluster development. Although the average mean scores of the cluster members are higher than those of the non-members, it is evident that besides the access to information and to some extent access to partners and supporting

institutions, cluster members do not think that they receive significant benefits from their clusters.

Main benefit that cluster members receive from cluster is access to information. According to the average mean score (4.03) they all agree that they have better access to information. Cluster members also believe that they have better access to business partners and business supporting organisations as a result of being involved in cluster activities.

However, it is evident that cluster members do not think that they have better access to raw materials and skilled labour, which are one of the most important benefits that clusters produce according to the literature and experience from industrialized countries (Klumbies et al., 2011). It can be concluded that the benefits produced by the clusters in transition countries in SEE are not the result of agglomeration effects, which is the case in countries where clusters are more of a geographical phenomenon.

The fact, however, that clusters positively affects the access to business partners, information and business supporting institutions is confirmed by the position of surveyed non-members, which feel that as a result of being outside of clusters they have more difficult access to information and business support institutions. The non-members mostly disagree with the statements that they have difficulties to access the financial resources, skilled labour, raw materials, supporting institutions, business partners, technology and customers as a result of being outside of clusters. Partly it could be result of not being aware of the cluster benefits, but according to the not very high mean scores of cluster members, most probably the non-members might be right when they feel that they are not losing anything with the fact that they are not participating in clusters.

Cluster members in all three countries have not received additional benefits in terms of increasing their competence, efficiency, productivity, cost effectiveness, profitability and innovativeness as a result of being cluster members. They neither disagree nor agree with the offered statements. On the other hand the companies which are not involved in cluster initiatives, do not see any disadvantage as a result of "being out of the game". This is very interesting finding, because this question is directly related to the research goals and

could indicate that, contrary to experiences in other industrialized countries, the types of clusters that exist in SEE do not affect the performance of participating SMEs.

The mean scores of the competence and innovativeness are the highest (3.46 and 3.41), which would lead to a conclusion that according to cluster members the clusters contribute more to increasing their competence and innovativeness than for other factors such as efficiency, productivity, profitability and cost effectiveness. However, all of them are in a category "neither disagree nor agree", which indicates that the cluster does not have any influence on the stated variables.

The results to question C1 indicate that the SMEs in all three countries do not share an opinion that clusters have any influence on their performance. They are neither more competitive as a result of being cluster members, nor more competitive as a result of not being cluster member. Being a cluster member or not does not influence their competitiveness.

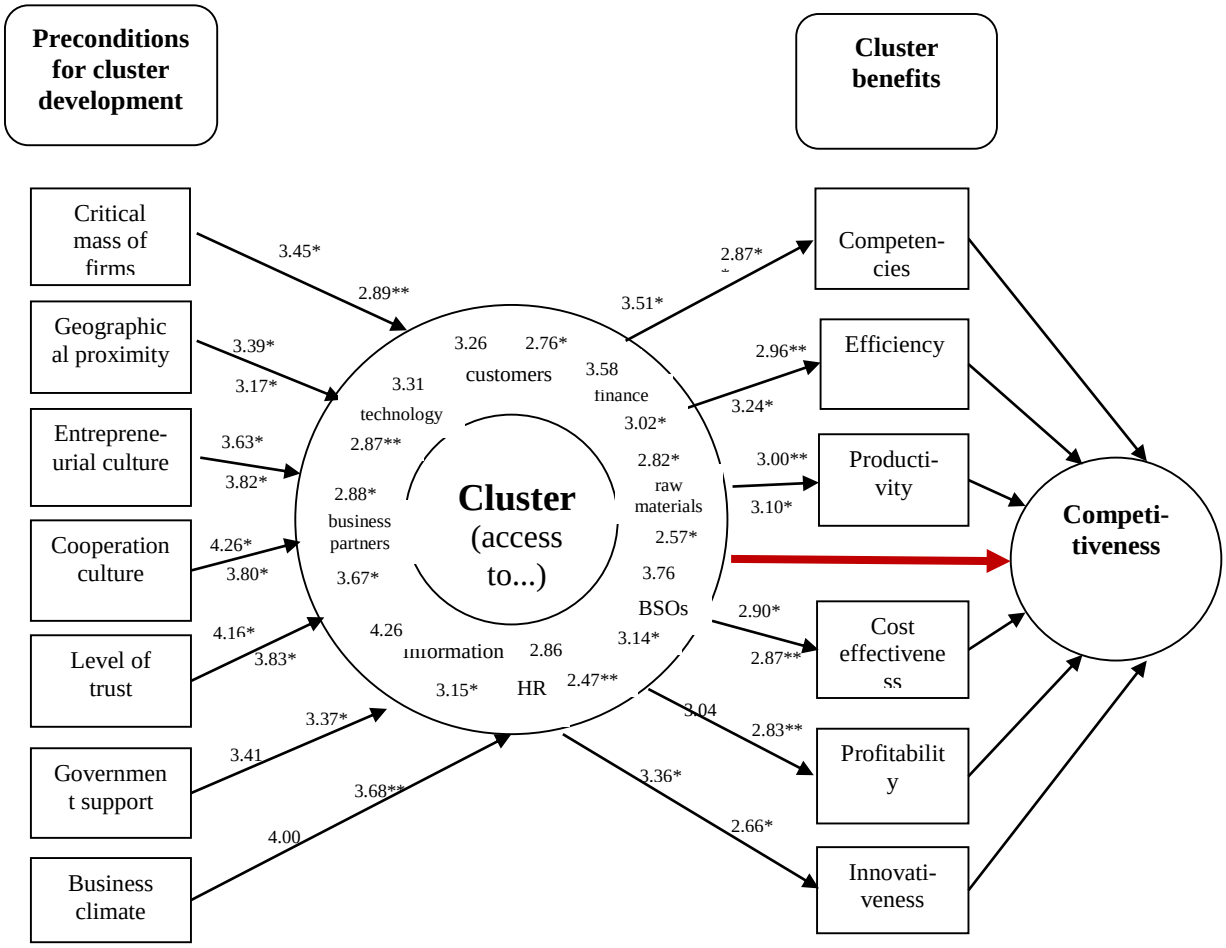
Cluster members vs. non-members by country

Bulgaria

The Figure 10.2 presents the Cluster model with the mean scores of the cluster members and non-members in Bulgaria

The cluster members in Bulgaria rate most of the preconditions for creating clusters as more important than non-members, with exception of entrepreneurial culture and governmental support, which are rated higher by the non-members In all of the cases, however, the difference is not statistically significant. According to both groups, cluster members and non-members, the least important preconditions for cluster development are existence of critical mass of companies, geographical proximity and governmental support.

Figure 10.2 Cluster model - Mean scores of the cluster members vs. non-members in Bulgaria



*mean scores – cluster members

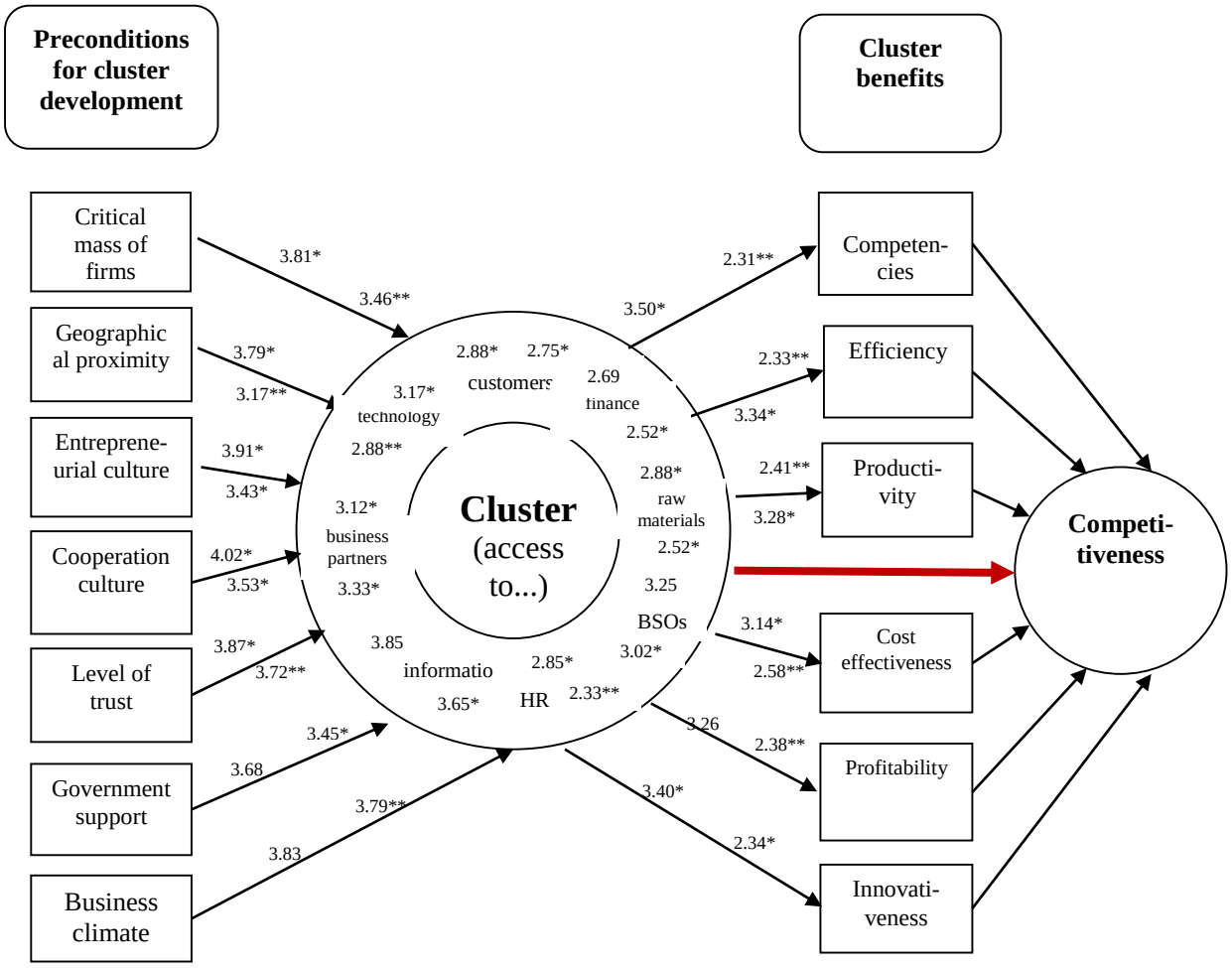
**mean scores – non-members

There is significant difference between the perceptions of both groups in Bulgaria. Cluster members have better access to information (4.26), business support institutions, business partners and financial institutions, compared to non-members. It can be concluded that in Bulgaria the cluster members receive benefits which are not available to the non-members. The received benefits have resulted in increase of the competencies of the cluster members in Bulgaria. This is the only area, where being a cluster member or not makes a difference. For the rest of the factors, such as efficiency, productivity, cost effectiveness, profitability and innovativeness, although they scored higher, there is no statistical evidence that indicates that clusters produce positive influence. Increasing of competencies of Bulgarian cluster members might be a result of intensive trainings that they have received under the cluster support programmes.

Republic of Macedonia (FYROM)

The Cluster model for Republic of Macedonia (FYROM) is presented in Figure 10.3:

Figure 10.3 Cluster model - Mean scores of the cluster members vs. non-members in Republic of Macedonia (FYROM)



*mean scores – cluster members

**mean scores – non-members

According to Figure 10.3 in Republic of Macedonia (FYROM) the cooperation culture have been also ranked highest by the cluster members, but the biggest difference between the cluster members and non-members is in the perception about the importance of the

geographical proximity of the companies. The cluster members think that geographical proximity maters and create some additional benefits.

The biggest benefit that cluster members receive is access to information. One of the interesting findings is that the expectation of the cluster members in Republic of Macedonia (FYROM) that clusters will improve their access to finance was not met. They neither agree nor disagree that clusters have influence on their access to finance.

There is almost no difference between the mean scores of the given variables. All of them are in a category "neither disagree nor agree", which indicates that according to the cluster members, the clusters in Republic of Macedonia (FYROM) does not contribute to increasing of competitiveness of cluster members.

Serbia

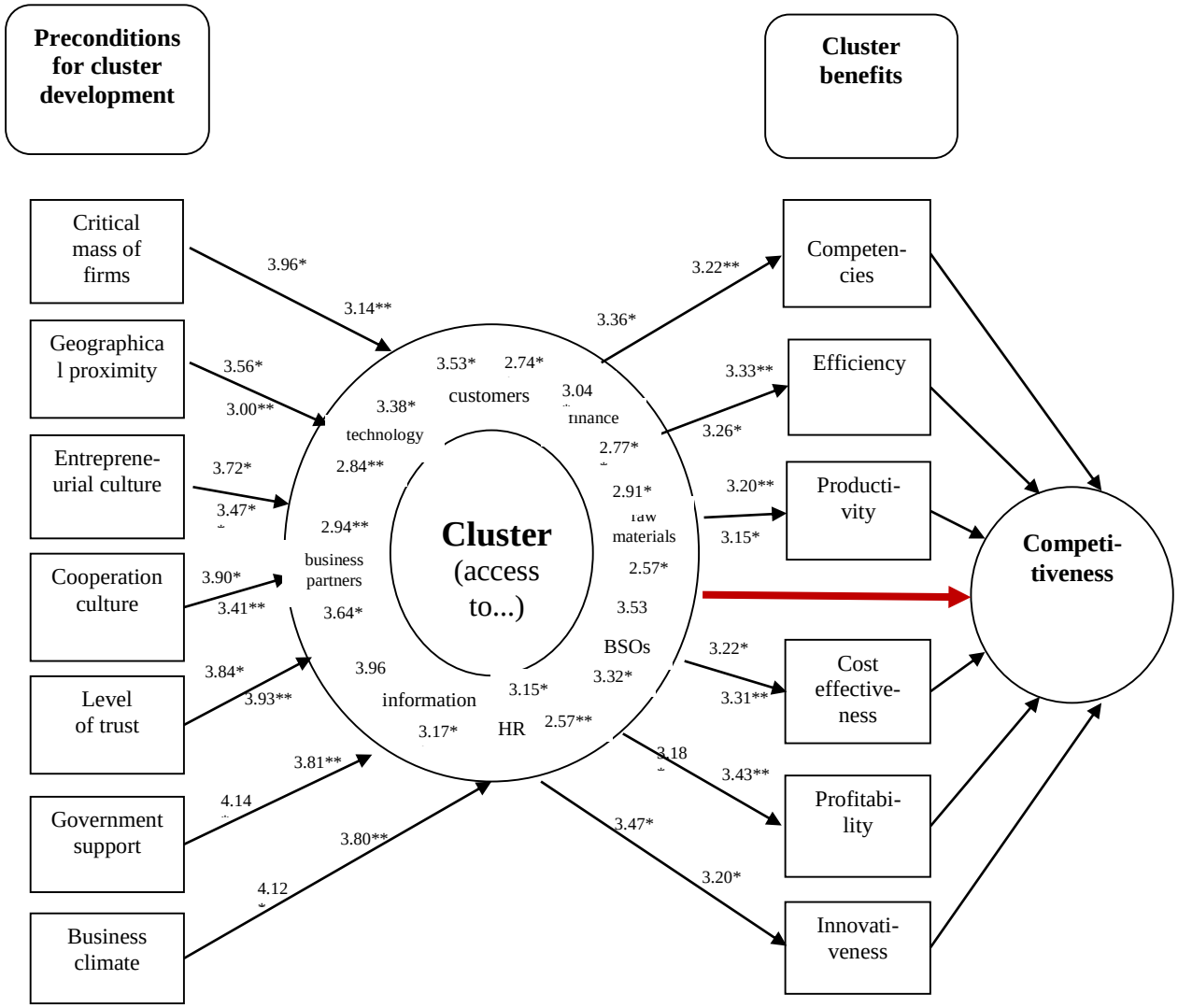
Figure 10.4 presents the links between the preconditions for clusters development, cluster benefits and competitiveness in Serbia.Serbian cluster members share the position that the governmental support is the most important precondition for cluster development. This might be a result of very high dependence of the Serbian clusters on the governmental cluster schemes that have been implemented in the last few years. The most evident difference between the cluster members and non-members is regarding the critical mass of SMEs in the same sector. The critical mass of SMEs was rated higher by the non-members.

It is evident that in Serbia cluster produces some benefits. The cluster members think that they have better access to information, business partners and customers. Compared to other countries only in Serbia the companies have better access to customers, and clusters positively influence expanding on new markets, which might be a result of joint trade fair participations and other market related activities, organized through clusters.

Same as in Republic of Macedonia (FYROM), in Serbia the benefits that cluster members receive as a result of participating in clusters, have not been translated into increasing their competitiveness. There is almost no difference between the cluster members and non-members about the mean scores of the given variables related to competitiveness. All

of them are in a category “neither disagree nor agree”, which indicates that according to the cluster members, the cluster does not have any influence on the stated variables.

Figure 10.4 Cluster model - Mean scores of the cluster members vs. non-members in Serbia



*mean scores – cluster members

**mean scores – non-members

Chapter 11

Based on the findings from the previous chapters, Chapter 11 will present final conclusions and recommendations, starting with direct responses on each of the research questions. The responses of the research questions will be elaborated in more details under the section of research results and implications, which will be then followed by discussion on novelty and main contributions from the academic point of view. One of the key contributions of this research is that it provides for the first time scientific evidence about the level of influence of clusters on competitiveness of the cluster members in transition economies in the SEE. In addition main contributions will be examined from the aspect of benefits for the cluster practitioners, policy makers and companies. The fact that companies from only three transition countries were surveyed is considered as one of the main research limitation, and therefore the conclusions from this research should be carefully applied to the rest of the transition countries in SEE. After discussion about the limitations of the research and the research methodology, recommendations for further researches will be provided. Concluding remarks will be presented at the end of the chapter.

11. Conclusions and recommendations

11.1 Responses to research questions

The research has been conducted from the perspective of key cluster actors – SMEs, who are supposed to be main beneficiaries from clusters. It has investigated how cluster participants are performing in relation to non-cluster ones and has made comparisons of performance of the companies before and after joining a cluster. The research has also compared the satisfaction of companies from different cluster assistance projects implemented by international organisations.

The direct responses to the research questions are as follows and the more detailed response will be presented in the next section:

- **Question 1** - whether the existing cluster initiatives in selected transition countries in SEE are creating additional benefits which are not accessible to non-cluster members?
  Cluster members in all three countries have received only limited additional benefits which are not accessible to the non members.

- **Question 2** - whether the existing cluster initiatives in selected transition countries in SEE are contributing towards increasing the competitiveness of participating SMEs?
  There is no statistical evidence that clusters in selected transition countries in SEE contribute to improving the competitiveness of cluster members.

- **Question 3** – do cluster support programs and projects, implemented by international donor organizations produce effective results for the cluster members
  The surveyed companies in all of the selected countries are not fully satisfied with the effectiveness of the results and impact achieved by the support from international cluster support institutions.

11.2 Research results and implications

Taking this study as a research on impact of the clusters on competitiveness of participating SMEs in the selected countries in transition in SEE, the following conclusions can be drawn:

First (detailed response to research question 1), Cluster members in all three countries have received only limited additional benefits from clusters which are not accessible to the non members. This is not completely in line with the literature which confirm that

competitors within the cluster benefit from agglomeration effects in a way where they will gain cost advantages and have access to resources that are not available to competitors not located in the cluster (Pouder and St. John, 1996 Gordon and McCann, 2000, Christensen et al.,2011).

Cluster members do, however, receive some benefits from participating in a cluster. The main benefit that cluster members receive from cluster is **access to information**. This is in line with the findings from the literature, which suggest that frequent exchange of information is most important for generation of economies of proximity and regard it as an important output of cluster activities, since information may provide the cluster members with new opportunities to build networks with potential partners (Nishimura and Okamuro, 2011, Klumbies et al., 2011). Cluster members also believe that they have better access to **business partners** and **business supporting organisations** as a result of being involved in cluster activities, butt is evident that they do not think that they have better access to raw materials and skilled labour, which are one of the most important benefits that clusters produce according to the literature and experience from industrialized countries (Klumbies et al., 2011). The benefits produced by the clusters in transition countries in SEE are not result of agglomeration effects, which is the case in countries where clusters are more of a geographical phenomenon. It can be concluded that the clusters in transition countries in SEE produce only marginal positive effects in a form of improving the access to information, business partners and supporting institutions.

Also the cluster members in all three countries do not have significantly better relations with other cluster members than with non-members and their decision to enter into business relations with a company does not depend if the company is cluster member or not. These results contradict the findings from Li and Geng (2012), who provided evidence to support arguments that cluster firms in comparison with non-cluster firms demonstrate significantly higher perceptions of shared resources and that shared resources exclusively available to cluster firms link to better cluster firm performance. Thus, it can be concluded that the clusters in the transition clusters do not contribute towards increasing the cooperation between the cluster members.

Cluster members in all of the countries do not see any positive correlation between being a cluster member and having better access to suppliers or official financial institutions. According to the both of the groups no particular change has occurred regarding their access to suppliers or financial institutions, as a result of being or not being a cluster member. They agree that the decision to buy from their suppliers is driven my business motives only, regardless if they are cluster members or not, which contradicts the findings from the literature that suggests that due to the concentration of more firms in an area, cluster facilitates the access to suppliers, specialized labour, research and development, technology, business infrastructure, finance, customers, business support organizations, etc. (Gallo and Moehring, 2002).

It is also evident that cluster members in Republic of Macedonia (FYROM) compared to cluster members in other analysed countries, are least satisfied with the extra benefits they receive as a result of participating in clusters. The non-members in Republic of Macedonia (FYROM) think that they could have better access to finance if they would have participated in clusters. This indicates that in Republic of Macedonia (FYROM) companies have very high expectations from clusters, before joining in, and that might explain their low level of satisfaction from unfulfilled expectations.

Second, (detailed response to research question 2) there is no statistical evidence that clusters in selected transition countries in SEE contribute to improving the competitiveness of cluster members. Although they produce positive effects in a form of improving the access to information, business partners and supporting institutions, contrary to Porter's (1998) findings, in the selected transition countries they do not yet translate into increased productivity, higher level of innovation capacity and improving the competitiveness of its members. On the other hand the companies which are not involved in cluster initiatives, do not see any disadvantage as a result of "being out of the game". For this question set of competitiveness indicators was used, but there is no difference between the answers on the cluster members and non-members. There is no pattern between both groups and they are neither more competitive as a result of being cluster members, nor more or less competitive as a result of staying out of the cluster.

Thus, being a cluster member or not does not influence their competitiveness, contrary to Christensen et al. (2011), who provide evidence that clusters contribute to better competitiveness for enterprises and more return on investment for investors, and better prosperity of the regions.

According to the mean scores there is a slight difference between the cluster members and non-members about the change of their business performance in the period 2009-2010 in favour of cluster members. It is so insignificant, however, that it would be not possible to make a conclusion that cluster members perform better than non members. The improvement of business performance could be result of other factors, not only based on the fact that a company is involved in cluster initiative. This finding that clusters in SEE do not affect the competitiveness of participating SMEs contradicts the experiences of industrialized countries and findings from and the extensive body of literature (Paniccia, 2000, Camison, 2003, Spencer et al., 2010, Titze et al., 2011, Sanchez and Omar, 2012),).

Third, (detailed response to research question 3) in general the surveyed companies in all of the selected countries are not satisfied with the coordination among cluster support institutions, staffing and the intensity of political and financial support of clusters. The summarized answers from all of the selected countries show that in general representatives of the surveyed companies do not have very strong opinion about how much they trust international organizations.

Clusters have been recognized as an instrument for economic development policies in the selected transition countries and as it is described in the literature the cluster-based assistance measures to companies should be taken with regard to the overall economic policy of the country (OECD, 2010, Bruch-Krumbein and Hochmuth, 2000). When selecting appropriate instruments for supporting cluster development, the policy support has to consider the stage of the cluster and the governments should support cluster development to achieve sustainable long-term development instead of concentrating on short-term priorities (Menzel and Fornahl, 2007, Xie et al., 2011, Boronenko and Zeibote, 201, Fornahl and Brenner, 2003). According to the findings from personal interviews the

successful cluster-based economic development approach needs to take into consideration both, positive and negative experiences from different countries and needs to be built on the specific conditions present in a location or country, which support the findings of Ketels and Memedovic (2008), who suggest that cluster policies need to be built on the specific conditions present in a location or country.

11.2.1 Novelty and contribution

Cluster members in all of the selected countries are much more informed about cluster support programs and institutions, than companies which are not cluster members. This is both, cause and consequence, since being informed about the benefits that cluster support programs are producing (or at least promising to produce) for cluster members, influence the decision of a company to join cluster initiative and on the other hand, when a company becomes a cluster members has access to more information about cluster support organizations and their programmes.

The surveyed companies agree that international cluster support organisations generally have the managerial and technical competence to initiate and develop industrial clusters. Companies from both groups rate the support of USAID and GIZ as average, while they are not satisfied with the cluster support provided by Italian Institute for Trade (ICHE). That is not surprising, since the cluster support activities of ICHE are very limited in all of the analysed countries.

Regarding the cluster support organizations, the companies from Republic of Macedonia (FYROM) are much less satisfied from cluster support from international donor organizations, compared to Bulgarian and Serbian SMEs, in spite of the significant support received, both financial and non-financial. It shows that in Republic of Macedonia (FYROM) the support from international development organizations, have not been so efficient and have not met the expectations of companies.

In Serbia both, cluster members and non-members are more satisfied with support received from GIZ than companies from Bulgaria and Republic of Macedonia (FYROM),

which is not surprising since GIZ has been very active in supporting automotive and ICT clusters, through covering administrative costs, salaries of cluster managers, promotional activities, trade fair participation, training courses, etc.

In Republic of Macedonia (FYROM) cluster members see the international organizations as a very important facilitator of cluster relationship, while in Serbia and Bulgaria the governmental institutions are the main drivers of the cluster development. In Serbia, most of the cluster initiatives have been set up by top-down approach with Ministry of Economy and Regional Development having a main role. In Bulgaria, the Governmental organizations such as Ministry of Economy, Energy and Tourism and Bulgarian Agency for SME promotion (BASME) provide most of the financial support and therefore also play very important role as facilitator of cluster interactions.

Since Bulgaria is member of EU the presence of international economic development organizations, such as USAID, UNDP, GIZ are not as significant as compared in Republic of Macedonia (FYROM) and Serbia. In Bulgaria also the Chamber of commerce rarely facilitates the interactions between the cluster members, but business associations are more active in that role.

The role of the Chambers of Commerce is not so visible in Bulgaria and Republic of Macedonia (FYROM) compared to Serbia. In Serbia there is a process of transformation of Chambers of Commerce in which the membership will cease to be mandatory starting from 2013. Therefore some of them try to support cluster initiatives as one of the ways of offering more quality services for attracting new members and as a way of supporting their regional economies.

In all of the selected countries, SMEs are recognised as a main engine of economic growth, and therefore they have developed different policies for stimulating the development of SME sector. Following the experiences of developed countries, the Republic of Macedonia (FYROM), Serbia and Bulgaria, have accepted the cluster approach, to varying degrees, as an instrument for improving their national competitiveness and have integrated the cluster policy in their main documents for SME

development. The official governmental policies for SME development are additionally supported by international organisations such as USAID, UNDP, GIZ, ICHE, and others which provide both, financial and technical assistance, but for sustainable results support from local government and private organizations is needed (Tambunan, 2005).

As main designers of cluster support projects, international organizations are selecting industrial sectors for developing cluster initiatives and setting measures for attracting the potential cluster members. Unfortunately, in some cases the selected sectors are not complementary with the national strategies for economic development and there is a lack of coordination between the governmental programs and those of the international organisations. That reality is in line with the findings of Birkinshaw and Hood (2000), who do not imply a rejection of foreign assistance programs, but suggested that there are indeed some reasons for host country governments to be concerned about the long-term sustainability of their largely dependent clusters.

In addition, in some cases the companies decide to become cluster members, only because they are afraid to stay "out of the game" without knowing in details what benefits would that decision brings. In addition to this, international organisations offer different models of supporting cluster development and propose different strategies for implementing measures, which creates confusion among SMEs in their overall perception of clusters. Since all of the donor organisations have different methods for monitoring and evaluations of the effectiveness of their methods, there is no clear picture regarding the impact of clusters on the economic performance of SMEs. They also have different methods for impact monitoring and evaluation of results of their cluster initiatives. Following the desire to present better results to the main funding organisations of cluster initiatives, in some cases the positive effects of clusters are overemphasized. In reality there is no strong evidence that cluster policy brings additional positive effect to the existing SME policy in the transition countries. Such effects have not been researched especially from the point of view of the SMEs, the main actors in the cluster development process, that their performance has been improved as a result of cluster effects.

Summary of country specific perceptions about the clusters is presented in Table 11.1

Table 11.1 Summary of specific country characteristics regarding cluster approach

Bulgaria	FYROM	Serbia
Clusters – preconditions and benefits		
• The surveyed companies in Bulgaria rate the existence of cooperation culture as much more important factor than their counterparts in Serbia. • The awareness about clusters in Bulgaria is on the lowest level compared to Republic of Macedonia (FYROM) and Serbia. • Bulgarian companies are considering lack of cooperation and trust as more important barrier, than their counterparts in Republic of Macedonia (FYROM) and Serbia. • Bulgarian cluster members receive benefits which are not available to the non-members. They have better access to information (4.26), business support institutions, business partners and financial institutions. These benefits, however, do not produce increase of competitiveness of	• The companies in Republic of Macedonia (FYROM) rate critical mass of SMEs as more important factor than the companies from Bulgaria and Serbia. • The companies in Republic of Macedonia consider the size of the market as a very important barrier for cluster development, since it does not allow them to focus on core competencies. This is the most significant difference between the perceptions of companies in the three countries. • Cluster members in Republic of Macedonia (FYROM) receive limited benefits as a result of participating in cluster (better access to information), which do not translate in increasing their competitiveness. There is almost no difference between the mean scores of the given variables in question C1, between the cluster members and non-members.	• The companies in Serbia consider the Governmental support as more important than compared to companies in other two countries. • Cluster members in Serbia receive more benefits as a result of participating in cluster (better access to information, business partners and customers), but still they do not translate in increasing their competitiveness. There is almost no difference between the mean scores of the given variables in question C1, between the cluster members and non-members.

Bulgarian cluster members		
Clusters and competitiveness		
• Bulgarian companies consider the lack of skilled labour and access to finance as bigger constraint compared to companies from Republic of Macedonia (FYROM) and Serbia. • In Bulgaria cluster members state that they have better access to financial resources and supporting institutions and information, compared to cluster members in Republic of Macedonia (FYROM) and Serbia.	• Cluster members in Republic of Macedonia (FYROM) compared to cluster members in other analysed countries, are least satisfied with the extra benefits they receive as a result of being cluster members. • In Republic of Macedonia (FYROM) companies have very high expectations from clusters, before they join in, but after becoming cluster members they realize that expectations have not been met.	• Serbian companies find administrative regulations as more serious constraint than companies in Republic of Macedonia (FYROM) and Bulgaria. • As a result of being cluster members, Serbian companies can expand their markets easier and have better access to customers.
Cluster policy		
• Bulgarian companies are more familiar with the programs of their Ministry of Economy, Energy and Tourism and its Program for support of competitiveness, compared to Republic of Macedonia (FYROM) and Serbia. • Bulgaria companies are more satisfied with the financial support they receive from cluster support organizations, compared to Republic	• Comparing between the three countries, the cluster members in Republic of Macedonia (FYROM) are least satisfied with the financial support they receive. • Companies in Republic of Macedonia (FYROM) receive significantly less support from Governmental institutions, compared with surveyed companies in Bulgaria and Serbia.	• Serbian companies are the most satisfied with the cluster support policy. • Serbian companies, both cluster members and non-members are more satisfied with support received from GIZ than companies from Bulgaria and Republic of Macedonia (FYROM). • The cluster members in Serbia believe more

of Macedonia (FYROM) and Serbia. • International cluster support organizations do not play such important role in Bulgaria in facilitating the cluster relations, as the ones in Republic of Macedonia and Serbia. • Companies in Bulgaria share the opinion that human resources in the cluster support institutions are more appropriate or have better capacities, when compared to companies in Republic of Macedonia (FYROM) and Serbia	• The cluster members in Republic of Macedonia (FYROM) are less satisfied with the cluster support from international donor organizations, compared to Bulgarian and Serbian companies.	that international donor organizations have managerial and technical competence to support clusters, compared to the cluster members in Bulgaria and especially in Republic of Macedonia (FYROM), where they are more sceptical regarding this issue.

In order to maximize the benefits of clusters as an instrument for accelerating economic growth, in all of the selected countries the public finances must be spent efficiently, and that is the reason for development of new tools for that can help identifying promising clusters and measure industrial cluster potential. Based on the summarized conclusions in the Table 11.1 the following policy recommendations can be drawn to the cluster policy makers in each of the countries:

Bulgaria

- To design intervention measures so to provide information and organize awareness building events (e.g. conferences, round tables, info days, etc.) for promoting cluster programs to the potential cluster members.
- To design and implement intervention measures aimed at providing platform for promotion of trust and improving cooperative behaviour between the companies.

Republic of Macedonia (FYROM)

- To adjust the cluster support policies with the national strategies for economic development and to provide more substantial financial support for cluster development in combination with technical assistance programs
- To develop effective system for monitoring the implementation of cluster related activities and evaluate the impact of the cluster support programs.
- To improve the coordination between the governmental programs and those of the international organisations.

Serbia

- To design intervention measures for stimulating bottom up cluster initiatives
- To improve the business climate for cluster development, especially with regard of reducing administrative regulations for institutionalizing cluster initiatives.

All three analyzed countries, which are subject of this research, have undergone a transition process of extensive and complex structural and institutional changes, which are aimed at creating conditions for the establishment of free and prosperous market economies. When this process started to be implemented in early 1990's, it was expected that the rapid development of a liberal market mechanisms would contribute towards solving all problems related to restructuring. After a bad experience with strictly regulated planned economies, the policy makers from transition countries have developed their economic policies around neoliberal economic model, which implies reducing the role of the government and the public sector to a minimum. In the last few years instead of providing sector-based government interventions, transition countries in SEE are embracing cluster based policies and entrepreneurship promotion strategies as a potential instrument for accelerating economic development.

This research contributes to the literature body of knowledge, by providing new insights into the cluster concept in the selected transition countries in SEE. Most of the cluster literature covers the experiences in developed countries where clusters already produced certain positive effects. Although not at the same extent as in the developed countries, the literature also provides examples of cluster approaches in developing countries and even in transition countries from Central and East Europe, but there is very limited presence of

cluster approach in transition countries from the countries which are subject of this research.

Even in cases where the literature examines cluster phenomenon in the transition economies, it has been approached from a perspective of institutions responsible for creating cluster support policies. Similarly to other developing and transition countries, most of the clusters that were created in Bulgaria, Serbia and Republic of Macedonia (FYROM) were initiated by international donor organizations, applying different methodologies and according to their monitoring and evaluation procedures, they appear to have yielded satisfactory results so far. However, no previous research has examined the impact produced by clusters from a perspective of companies - the cluster members, as final beneficiaries of cluster-based policies.

Therefore one of the key contributions of this research is that it fills in the literature gaps, through analysing the influence of clusters on business performance of the cluster members in selected countries for the first time from SME perspective. Starting from summarizing different theoretic concepts on cluster development, it provides a conceptual model for presenting the correlation between preconditions for cluster development, cluster benefits and competitiveness in Bulgaria, Republic of Macedonia (FYROM) and Serbia.

There is also no other study in this part of Europe that compares the business performance of cluster members to non-members, by exploring the findings from the literature review that geographical proximity, shared infrastructure and strong links between cluster firms create extra benefits for the cluster members and if there are such dynamic interactions between the cluster members that provide the participating companies with advantages that are not available for non-members.

By analysing the existing experience and interactions of the cluster participants in the selected countries this research contributes in filling the literature gaps and provides solid base for more effective measuring the impact of the cluster interventions. The research also provides insights about similar patterns or differences in behaviour of cluster

members in the selected countries in SEE. In addition to comparing cluster members to non-members, as well as cluster members between countries, this is the first time the business performance of non-members to be analysed, which is a unique contribution to the academic knowledge.

This research contributes to academic knowledge, through developing a conceptual Cluster model for presenting the links between the necessary preconditions for cluster development, cluster benefits and competitiveness of the cluster members. This model is meant to serve the purpose of stimulating further academic discussion on these topics and to provide a base for designing better cluster support instruments and more effective measuring of performance of clusters in the transition countries in South Eastern Europe.

The results from the PhD thesis will also assist practitioners (e.g., policy makers and representatives from the private sector), in the process of developing cluster-based strategies for economic development. Governmental institutions could benefit from the research in the process of efficient designing and implementing cluster policies and coordination of different cluster approaches introduced by international donor organisations, which sometimes are in collision with each other. The outcomes of the research is expected to be applicable not only to decision makers at macro level, but to the private sector and supporting institutions as well, giving them a more broadened insight about the preconditions for efficient networking and cooperation and will help them to develop management tools in accordance with the cluster based regional economic development. The benefit for the companies is that they might be more familiar with the cluster approach and will be able to make more informed decisions regarding joining into clusters, adjusting their expectations and managing cluster relations.

11.3 Limitation of the research and research methodology

One of the biggest obstacles for conducting the research was the lack of relevant statistical information for the SME sector and cluster development in the selected

countries. The main limitation of the study is that it focuses only on three countries and the driven conclusions might not be applicable to all of the transition countries in South East Europe. Identification of functional clusters was challenge as well, because some of the clusters have been out of operation due to various reasons or in other cases groups of companies functioned more as clusters than clusters with formalized relations and institutionalized cooperation.

Another limitation is that in spite of the intention to do so, due to limited number of cluster initiatives in the selected countries it was not possible to identify critical number of clusters from similar economic sectors and therefore there is a significant difference between the structures of the cluster members in the selected countries. The cluster emerged in different industries, due to different reasons and even in cases where similar clusters were compared, the number of the surveyed companies from each of them was not the same because of differences in the size of the clusters.

Regarding the comparison between cluster members and non-members, when filling the questionnaire, the cluster members were providing answers of the questions from their own experience, while in certain cases the non-members could express their opinion only based on their understanding and familiarity with the cluster concept. Although the aim of comparison is to show if there is a certain pattern behind the perceptions of cluster members to non-members, this limitation of not having the same knowledge about clusters, needs to be taken in consideration when comparing both groups. For addressing this limitation all of the surveyed companies have been asked to define a cluster (question B1 – "How would you define cluster") in order their understanding about cluster concept to be assessed. As it was assumed all of the cluster members provided a correct definition that was close to the definitions from the literature review, but from non-members only companies that provided definition that showed that they have at least basic understanding about what clusters are, were included in the survey.

Since the survey has been conducted in the period from 2009 to 2012 there is a possibility that things have been changed, although most of the questionnaires have been collected in the last quarter of the 2011. This should be especially taken in consideration with

regard of the global economic crisis, which produced most evident damages during the 2012.

Regarding the limitations of the research methodology, it has to be underlined that while in proportionate quota sampling, the sample size from each sub-group is proportionate to the size of the sub-group in relation to the overall the population, the non-proportionate method does not do this balancing, because the exact proportions are not known. That means that although the same number of cluster members and non-members were surveyed in each of the selected countries, they do not represent the equal percentage of total number of clusters in their countries.

A risk with cluster sampling is that some geographic areas can have different characteristics. For example in spite of the similarity in their historical and political background the selected countries in transitions, do have their specific characteristics, which have to be taken in consideration. In addition, in quota sampling, the selection of the sample is non-random and therefore can be unreliable, in a sense that the selection of cluster members and non-members can be biased, since not every company has a chance to be selected. For example, the researcher might be tempted to survey only companies from more successful clusters, or from certain type of industrial sector. This causes uncertainty about the nature of the actual sample and quota versus probability sampling method has been a matter of controversy for many years (Moore and McCabe, 2005).

11.4 Recommendations for further research

Although this study has provided valuable information from a sample of 300 companies, more robust studies are called for in order to confirm these findings, especially because of the continuous changes in the cluster environment in this region. Since the cluster based policies have been recently initiated in other countries in the region, this research can be geographically extended to other SEE countries in the future (e.g., Albania, Montenegro, BiH), aiming at assessing if different approaches have been applied or if same approaches produce different results.

Besides extended geographical coverage, through applying certain modification in methodology, the research could be further developed in direction of getting more in depth insights about the benefits of particular types of clusters with specific strategic importance. The increased number of cluster initiatives in the SEE, as a result of more intensive cluster policy measures, provides an opportunity for comparing the performance of clusters from same economic sectors and comparing the performance of cluster members and non-members in similar industries.

When exploring the impact of clusters on competitiveness of its members a clear distinction should be made between the cluster benefits on different level in short and long run. Therefore measuring perfomance of clusters alongside different levels of the impact chain, could be a topic for further resreach.

11.5 Concluding remarks

Main concluding remark from academic perspective is that due to specific economic, social and historical factors, the role of clusters in the transition countries in SEE deserve a special attention, with regard to their influence on SME competitiveness. Redefinition of the term *cluster* might be taken in consideration in order to be distinguished from clusters in developed countries. Instead of using the existing terminology based on cluster definitions from the literature, the term *cluster initiative* might better describe the specific cluster based relations and strategies, within the SEE context. In addition to the conclusions related to the research questions, some findings have appeared that are not directly linked to the them and which were not planned to be analysed when the research was initiated

One of the main findings from practical perspective is that in the analysed countries clusters are seen more as a development tool than as geographical phenomena. The two aspects are very important to be taken in consideration when analysing clusters in transition economies in the SEE. The main differences between clusters in industrialized

countries and clusters in transition economies are: as geographical phenomena (as defined by the literature) and clusters as development tool are:

- The clusters in industrialized countries are based on geographical concentration and existence of critical mass of companies from the same sector. They have more members and their high concentration produces so called agglomeration benefits are produced for the cluster members. On contrary, in the transition economies the clusters are seen as a development tool and they consist of few members, (most often between 5 and 10), who have joint together in order to work towards achieving the same objective.

- While the first one have emerged spontaneously, and have very long track record, as a result of specific mix of economic conditions, the clusters in transition economies have been a result of recent initiatives, which have been established in the last ten years, as a result of specific cluster policy interventions.

- One of the main characteristics of clusters in the industrialized countries is existence of cooperation and competition between the cluster members, while in the transition economies the competition between the cluster members occurs in exceptional cases only. Most often the clusters have been established by companies that are not directly competing with each other.

- In the industrial countries the clusters as described in the literature in many cases are functioning spontaneously without being registered as a separate legal entity and being located in certain geographical area is enough for the companies from specific sector to become cluster members. In most cases the clusters in transition economies in SEE are institutionalized and becoming a cluster member is a result of conscious business decision by the individual companies. Institutionalization of clusters is very often a precondition for being eligible for competing for different forms of financial support.

- The clusters in the industrialized countries are characterised with vast amount of interaction between the cluster members, both on horizontal (same level of production, common customers, technology), vertical (buyer/supplier) and lateral level (related companies from different sectors – e.g. financial institutions, marketing companies, consultants, etc.), while the existing linkages between the cluster members in transition economies are not that strong and are mainly stimulated by external factors.

- There is also difference between the role of the cluster management of clusters in industrialized countries and clusters in the transition economies. The cluster management in the previous acts as a service provider to its members, while the cluster management in clusters in transition economies has coordinative or facilitative role, aiming at strengthening inter-cluster linkages and trying to contribute towards maximizing the benefits of joint cluster collaboration.

- Clusters in industrialized countries finance their operations through providing income generating services, based on the market needs of the cluster members. The cluster members are able to finance the cluster management and their joint activities, from their additional income, as a result of improving their business performance and increasing their competitiveness. On contrary, the clusters in transition economies are heavily dependent on external public finances, either from Governmental cluster support programs or from international organizations. In many cases the main motivation for cluster development is getting access to external finances.

- In the industrialized countries the clusters as seen as more of a business strategy of the cluster members, which joint forces in order to improve their business performance. The business logic is not so evident in the cluster management of clusters in the transition economies, and they operate more as project based civil society organizations, that are to a great extent dependent on external support.

Policy makers should take interventions that are aimed at strengthening and stimulating the factors that positively affect cluster initiatives.

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13 Appendices

13.1 Appendix A

13.1.1 Questionnaire for cluster members

CLUSTER SURVEY QUESTIONNAIRE
(Cluster members)

The Use of a Cluster Approach for Improving the Competitiveness of SMEs in Transition Countries

The Case of Bulgaria, Republic of Macedonia and Serbia

This questionnaire is aimed at SME's, cluster members who are believed to be the main beneficiaries from clusters. Cluster members are considered only companies which participate in a formalized cluster. Your answers are anonymous and confidential and only aggregate results will be presented and used for academic purposes. Filling in the questionnaire should take no more than 15 minutes. Feel free to contact me (akaraev@mt.net.mk), or any of the undersigned, if you need additional information regarding the questionnaire. If you are interested to get the final results, please let us know. We will send them with pleasure, as gratitude for your participation. Thank you for your contribution.

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Company name: _____

Contact address: _____

Contact person: _____

Position: _____

A. General information

A1. What is your position in the company? *(please tick only 1 box)*

- Owner or general manager ☐
- Manager ☐
- Other (please specify): ☐

A2. Gender

male ☐ female ☐

A3. Age:

20 - 34 years ☐
35 - 49 years ☐
50 - 64 years ☐
65 and more ☐

A4. Level of education

primary school	☐	high school	☐
undergraduate	☐	masters / PhD	☐

A5. Legal status of the enterprise: *(please tick only 1 box)*

- Sole proprietor ☐
- Private limited enterprise ☐
- Public limited enterprise ☐
- Partnership (other enterprise(s) have a holding equal to or greater than 25%) ☐
- Other (please specify): ☐
- Don't know` ☐

A6. How many years has your organization been in operation?

- new enterprise (under 6 months) ☐
- 6 months to 2 years ☐
- 2-5 years ☐
- 6-10 years ☐
- More than 10 years ☐

A7. What is the size of the enterprise (grouping based on number of employees)

- Micro (1-9 employees) ☐
- Small (10-49 employees) ☐
- Medium (50-249 employees) ☐
- Large (> 249 employees) ☐

A8. Which economic sector does the enterprise belong to (based on National Accounts in Europe (NACE) nomenclature - statistical classification of economic sectors, of the EU)?

- Agriculture, hunting and forestry ☐
- Fishing ☐
- Mining and quarrying ☐
- Manufacturing ☐
- Electricity, gas and water supply ☐
- Construction ☐
- Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods ☐
- Hotels and restaurants ☐
- Transport, storage and communication ☐
- Financial intermediation ☐
- Real estate, renting and business activities ☐
- Public administration and defense, compulsory and social security ☐
- Education ☐
- Health and social work ☐
- Other community, social and personal service activities ☐
- Extraterritorial organizations and bodies ☐

A9. Which cluster does the enterprise belong to?

_____

A10. Please indicate all of the following business association you are a member of

- Bulgarian Chamber of Commerce and Industry (BCCI) ☐
- Bulgarian Industrial Association (BIA) ☐
- Bulgarian Union of Private Entrepreneurs ☐
- Union for Economic Initiative ☐

- Employers Association of Bulgaria (EABG) ☐
- Bulgarian Industrial Capital Association (BICA) ☐
- Bulgarian International Business Association (BIBA) ☐
- Bulgarian Association of Software Companies (BASSCOM) ☐
- Bulgarian Association of Information Technology (BAIT) ☐
- Other (please specify) _____ ☐

A11. Do you participate in some of the following types of business cooperation?

- Consortium ☐
- Business Alliance ☐
- Network ☐
- Other (please specify)_____ ☐
- None of the mentioned ☐

A12. What are the three **MAIN** reasons for your company **BECAME** a member of an organized business cluster?

1. _____

2. _____

3. _____

B. Clusters – preconditions and benefits

B1. How would you define a cluster?

_____

_____

_____

_____

B2. Who initiated the formation of your cluster? *(please tick all that apply)*

- SMEs ☐
- Governmental institutions
  (E.g. Ministry of Economy) ☐
- International Organizations ☐
  - USAID ☐
  - GIZ ☐
  - UNDP ☐
  - Other (please specify) ☐
- Other (please specify)_____ ☐

B3. Please indicate the importance of the following factors in cluster formation within your region

(please rate from 1 = not at all important, 2 = not important, 3 = neither important not important, 4 = important, to 5 = very important)

Statement	1	2	3	4	5
There is a critical mass of SMEs in the same sector					
There is geographical proximity of members					
There is an entrepreneurial culture in the region					
There is appropriate culture of cooperation					
There is sufficient level of trust					

There is a governmental support					
There is appropriate business climate					
Other (please state)					

B4. Please indicate the importance of the following barriers for cluster formation within your region

(please rate from 1 = not at all important, 2 = not important, 3 = neither important not important, 4 = important, to 5 = very important)

Statement	1	2	3	4	5
Lack of awareness about clusters					
Lack of cooperation and trust between the stakeholders					
Inappropriate legal framework					
Small market does not allow companies to focus on core competencies					
Inappropriate cluster support policy					
Other (please state)					

B5. Please express your opinion on the following statements about your cooperation with other cluster members after becoming a cluster member

(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Statement	1	2	3	4	5
Our company has better relations with cluster members compared to the non-members					
We more easily enter into cooperation or joint activities with other cluster members than with non-members					
We enter into join marketing activities more easily with other cluster members than non-members					

B6. All things being equal would you prefer to do the following activities with cluster members or non-cluster members? *(please tick only 1 box per row)*

	Cluster members	Non-members
Business training		
Marketing		
Fair participation		
Joint investment		
Research and Development (R&D)		

C. Clusters and Competitiveness

C1. As a result of being a cluster member my company is more:
(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Statement	1	2	3	4	5
competitive					
efficient					
productive					
cost effective					
profitable					
innovative					
other (please specify)_____					

C2. To what extent do you agree that the following factors have been a constraint on your business performance over the last 3 years
(please rate from 1 = not a major constraint, 2 = not a constraint, 3 = indifferent factor, 4 = constraint, to 5 = major constraint)

Statement	1	2	3	4	5

Lack of skilled labor					
Access to finance					
Implementing new technology					
Implementing new forms of organization					
Quality management					
Administrative regulations					
Infrastructure (road, gas, electricity, communication etc.)					
Other (please specify)					

C3. As a cluster member, to what extent do you agree or disagree that your company has better access to:

(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Statement	1	2	3	4	5
financial resources					
skilled labor					
raw materials					
supporting institutions					
business partners					
information					
technology					
customers					
other (please specify)_____					

C4. Please express your opinion on the following statements about your access to suppliers after becoming a cluster member

(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

Statement	1	2	3	4	5
Our company has better access to suppliers, since they are more concentrated in the cluster					
There is no particular change regarding the access to suppliers since we joined the cluster					
The selection of our suppliers is mainly driven by price, regardless whether the supplier is cluster member or not					
Suppliers that are members of the cluster have advantage over non-cluster members					

C5. Please express your opinion on the following statements about your access to finance after becoming a cluster member

(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

Statement	1	2	3	4	5
Our company has better access to financial institutions, since they are more concentrated in the cluster					
There is no particular change regarding the access to finance since we joined the cluster					
The selection of our financial institution is mainly driven by quality and price of services price, regardless whether the financial institution is cluster member or not					
Financial institutions that are members of the cluster have advantage over non-cluster members					

C6. How often do you use the following competitiveness indicators to track your financial and other key results ?

(please rate from 1 = never, 2 = rarely, 3 = not so often, 4 = often, to 5 = always)

Statement	1	2	3	4	5
basic financial indicators: sales, profit, turnover, etc.					

basic non-financial measures, e.g. market share, value added, productivity, innovativeness, etc.					

C7. How has your performance changed over the last 2 years on the following measures?

(please rate from 1 = much worse; 2 = worse; 3 = no improvement; 4 = some improvement; 5 = significant improvement)

Statement	1	2	3	4	5
basic financial indicators: sales, profit, turnover, etc.					
basic non-financial measures, e.g. market share, value added, productivity, innovativeness, etc.					

C8. Please evaluate your competitiveness performance after becoming a cluster member on the following criteria:

(please rate from 1 = much greater, 2 = greater, 3 = no difference,4 = smaller, to 5 = much smaller)

	1	2	3	4	5
Main financial information					
Turnover (on domestic market)					
Export turnover					
Marketing expenditure					
R&D expenditure					
Capital investments					
Pre-tax profit					
Market share					
Product and/or service innovation					
Turnover from new products/services					
Turnover from new market segments					

Turnover from new geographical markets					
Number of new customers					
Customer satisfaction					
Number of customers					
Number of orders received					
Number of orders not delivered when promised					
Number of recorded customer complaints					
Number of orders rejected by the customers during specific warranty period					
Suppliers					
Number of suppliers used for delivery of core products/services					
Delivery time					
People management					
Number of employees					
Number of managers					
Number of new employees					
Number of people who left within the last 3 years					
Number of people who left within 6 months of joining					
Absenteeism (number of days per year)					

D. Cluster support policy

D1. Are you sufficiently informed about various cluster support programs available in your region?

(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

Statement	1	2	3	4	5

We are well informed					
We are not well informed					

D2. Are you familiar with the following institutions and their activities/ programs for cluster and SME support and, if so, to what extent?
(please rate between 1= never heard of, 2 = heard of, but don't know what is their role, 3 = informed partially, 4 = informed, but not in detail and 5= informed in detail)

Institutions/ programs	1	2	3	4	5
National level					
Ministry of Economy					
Program for supporting competitiveness					
Program for export promotion					
Agency for Promotion of Entrepreneurship					
Agency for foreign Investment					
European Information and Correspondence Centre					
Other institutions/programs on national level (please specify_____)					
Local level					
Regional Enterprise Support Centres					
Other SME centers					
Business Incubators					
LED office in your municipality					
Local / regional consultancy firms					
Other institutions/programs on local/regional (please specify_____)					

D3. Have the following specified policies, programs and measures been implemented in a consistent and sustainable manner?
(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

	1	2	3	4	5
Coordination among various state bodies					
Staffing					
Political support					
Financial support					
Other (please specify)_____					

D4. Which forms of non-financial support are important for your cluster to become successful?

(please rate from 1= not at all important, 2 = not important, 3 = neither important nor not important, 4= important, 5 = very important)

	1	2	3	4	5
Information centers (providing information on loans, donors, support programs, investors, partners, websites, brochures, etc.)					
Training programs and on-the-job training (co-financed by the public authorities)					
Training of managers					
Resource centre for managers (managers to visit a company when needed, for instance, for marketing purposes)					
Business planning or re-structuring					
Incubators					
Technology parks					
Other (please specify):_____					

D5. Please indicate with which of the following organizations you had contacts over the last three years to get information on innovation

- Universities ☐
- Patenting institutions ☐
- Research laboratories ☐
- Consultants ☐
- Other (please specify)_____ ☐

D6. How often your interactions within a cluster been facilitated through the following intermediary organisations?

(please rate between 1= always, 2 = 0ften, 3 = not so often, 4 = rarely and 5 = never)

	1	2	3	4	5
International Organisations/Donors					
Government Agencies					
Chambers of Commerce					
Business Associations					
Other (please state)_____					

D7. Please rate the overall assistance of the following cluster supporting organisations in your region/nation

(please rate from 1 = very good, 2 = good, 3 = average, 4 = poor, to 5 = very poor)

	1	2	3	4	5
United States Agency for International Development (USAID)					
German Organization for International Cooperation (GIZ)					
Italian Institute for Trade (ICHE)					
Other (please state)					

D8. How much do you trust the international cluster supporting organisations in relation of the following?

(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

	1	2	3	4	5
International cluster support organisations generally have the managerial and technical competence to initiate and develop industrial clusters					
International cluster support organisations will always meet their commitments with the business community in the cluster development process, and will usually do more than is formally expected?					
International cluster support organisations are following the needs of business community, more than their own goals					

Feel free to tell us anything you wish regarding clusters and cluster development within your country

_____

_____

_____

_____

_____

_____

Please thick the box if you would like to receive a copy of the aggregated results from the research ☐

We sincerely appreciate your time and effort

Thank You for participating in our research.

13.2 Appendix B

13.2.1 Questionnaire for non-members

CLUSTER SURVEY

QUESTIONNAIRE

(non-cluster members)

The Use of a Cluster Approach for Improving the Competitiveness of SMEs in Transition Countries

The Case of Bulgaria, Republic of Macedonia and Serbia

This questionnaire is aimed at SME's, which do not participate in any formalised cluster. Cluster members are considered only companies which participate in a formalized cluster. The answers are anonymous and confidential and only results presented in aggregate terms will be used for academic purposes. Filling in the questionnaire will take you only 15 minutes of your time. Feel free to contact me (akaraev@mt.net.mk), or any of the undersigned, if you need additional information regarding the questionnaire. If you are interested to get the final results, please let us know. We will send them with pleasure, as gratitude for your participation. Thank you for your contribution.

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Company name: _____

Contact address: _____

Contact person: _____

Position: _____

A. General information

A1. What is your position in the company? *(please tick only 1 box)*

- Owner or general manager ☐
- Manager ☐
- Other (please specify): ☐

A2. Gender

male ☐ female ☐

A3. Age:

20 - 34 years ☐
35 - 49 years ☐
50 - 64 years ☐
65 and more ☐

A4. Level of education

primary school ☐ high school ☐
undergraduate ☐ masters / PhD ☐

A5. Legal status of the enterprise: *(please tick only 1 box)*

- Sole proprietor ☐
- Private limited enterprise ☐
- Public limited enterprise ☐
- Partnership (other enterprise(s) have a holding equal to or greater than 25%) ☐
- Other (please specify): ☐
- Don't know/ don't answer ☐

A6. How many years has your organization been in operation?

- new enterprise (under 6 months) ☐
- 6 months to 2 years ☐
- 2-5 years ☐
- 6-10 years ☐
- More than 10 years ☐

A7. What is the size of the enterprise (grouping based on number of employees)

- Micro (1-9 employees) ☐
- Small (10-49 employees) ☐
- Medium (50-249 employees) ☐
- Large (> 249 employees) ☐

A8. Which economic sector does the enterprise belong to (based on National Accounts in Europe (NACE) nomenclature - statistical classification of economic sectors, of the EU)?

- Agriculture, hunting and forestry ☐
- Fishing ☐
- Mining and quarrying ☐
- Manufacturing ☐
- Electricity, gas and water supply ☐
- Construction ☐
- Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods ☐
- Hotels and restaurants ☐
- Transport, storage and communication ☐
- Financial intermediation ☐
- Real estate, renting and business activities ☐
- Public administration and defense, compulsory and social security ☐
- Education ☐
- Health and social work ☐
- Other community, social and personal service activities ☐
- Extraterritorial organizations and bodies ☐

A9. Please indicate all of the following business association you are a member of

- Bulgarian Chamber of Commerce and Industry (BCCI) ☐

- Bulgarian Industrial Association (BIA) ☐
- Bulgarian Union of Private Entrepreneurs ☐
- Union for Economic Initiative ☐
- Employers Association of Bulgaria (EABG) ☐
- Bulgarian Industrial Capital Association (BICA) ☐
- Bulgarian International Business Association (BIBA) ☐
- Bulgarian Association of Software Companies (BASSCOM) ☐
- Bulgarian Association of Information Technology (BAIT) ☐
- Other (please specify) _____ ☐

A10. Do you participate in some of the following types of business cooperation?

- Consortium ☐
- Business Alliance ☐
- Network ☐
- Other (please specify)_____ ☐
- None of the mentioned ☐

A11. What are the three **MAIN** reasons that your company has **NOT** become a member of an organized business cluster?

1. _____

2. _____

4. _____

B. Clusters – preconditions and benefits

B1. How would you define a cluster?

_____

_____

_____

_____

B2. Who usually initiates the clusters formation in your country? *(please tick all that apply)*

- SMEs ☐
- Governmental institutions (eg. Ministry of Economy) ☐
- International Organistaions ☐
  - USAID ☐
  - GIZ ☐
  - UNDP ☐
  - Other (please specify) ☐
- Other (please specify)_____ ☐

B3. Please indicate the importance of the following factors for cluster formation within your region

(please rate from 1 = not at all important, 2 = not important, 3 = neither important not important, 4 = important, to 5 = very important)

Statement	1	2	3	4	5
There is a critical mass of SMEs in the same sector					
There is geographical proximity of members					
There is an entrepreneurial culture in the region					
There is appropriate culture of cooperation					
There is sufficient level of trust					
There is a governmental support					
There is appropriate business climate					

Other (please state)					

B4. Please indicate the importance of following barriers for cluster formation within your region

(please rate from 1 = not at all important, 2 = not important, 3 = neither important not important, 4 = important, to 5 = very important)

Statement	1	2	3	4	5
Lack of awareness about clusters					
Lack of cooperation and trust between the stakeholders					
Inappropriate legal framework					
Small market does not allow companies to specialise					
Inappropriate cluster support policy					
Other (please state)					

B5. All things being equal would you prefer to do the following activities with cluster members or companies which are outside of a cluster

(please tick only 1 box per row)

	Cluster members	Non-members
Business training		
Marketing		
Fair participation		
Joint investment		
Research and Development (R&D)		

C. Clusters and Competitiveness

C1. As a result of not being a cluster member my company is more:

(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Statement	1	2	3	4	5
competitive					
efficient					
productive					
cost effective					
profitable					
innovative					
other (please specify)_____					

C2. To what extent do you agree that the following factors have been a constraint on your business performance over the last 3 years

(please rate from 1 = not a major constraint, 2 = not a constraint, 3 = indifferent factor, 4 = constraint, to 5 = major constraint)

Statement	1	2	3	4	5
Lack of skilled labor					
Access to finance					
Implementing new technology					
Implementing new forms of organization					
Quality management					
Administrative regulations					
Infrastructure (road, gas, electricity, communication etc)					
Other (please specify)					

C3. As a result of not participating in a cluster to what extent do you agree that your company has more difficult access to:

(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Statement	1	2	3	4	5
financial resources					
skilled labor					
raw materials					
supporting institutions					
business partners					
information					
technology					
customers					
other (please specify)_____					

C4. Please comment the following statement:
(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

Statement	1	2	3	4	5
As a result of not participating in a cluster my company has more difficult access to additional benefits compared to cluster members?					

C5. Please express your opinion on the following statements about your access to suppliers after deciding not to became a member of a cluster
(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

Statement	1	2	3	4	5
Our company has more difficult access to suppliers, since they are more concentrated in the cluster					
There is no particular change regarding the access to suppliers since we decided not to become member of a cluster					

The selection of our suppliers is mainly driven by price, regardless whether the supplier is cluster member or not					
Suppliers that are not members of the cluster have advantage over cluster members					

C6. Please express your opinion on the following statements about your access to finance after deciding not to become member of a cluster
(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

Statement	1	2	3	4	5
Our company has more difficult access to financial institutions, since they are more concentrated in the cluster					
There is no particular change regarding the access to finance since we decided not to become a cluster member					
The selection of our financial institution is mainly driven by quality and price of services price, regardless whether the financial institution is cluster member or not					
Financial institutions that are not members of the cluster have advantage over cluster members					

C7. How often do you use the following competitiveness indicators to track your financial and other key results ?
(please rate from 1 = never, 2 = rarely, 3 = not so often, 4 = often, to 5 = always)

Statement	1	2	3	4	5

basic financial indicators: sales, profit, turnover, etc.					
basic non-financial measures, e.g. market share, value added, productivity, innovativeness, etc.					

C8. How has your performance changed over the last 2 years on the following measures?

(please rate from 1 = much worse; 2 = worse; 3 = no improvement; 4 = some improvement; 5 = significant improvement)

Statement	1	2	3	4	5
basic financial measures: sales, gross and net profit, stock turn etc.					
basic non-financial measures, e.g. market share, machine breakdowns, process cycle time, etc.					

C9. Please evaluate your competitiveness performance after deciding not to become a member of a cluster on the following criteria:

(please rate from 1 = much greater, 2 = greater, 3 = no difference,4 = smaller, to 5 = much smaller)

	1	2	3	4	5
Main financial information					
Turnover (on domestic market)					
Export turnover					
Marketing expenditure					
R&D expenditure					
Capital investments					
Pre-tax profit					
Market share					

Product and/or service innovation					
Turnover from new products/services					
Turnover from new market segments					
Turnover from new geographical markets					
Number of new customers					
Customer satisfaction					
Number of customers					
Number of orders received					
Number of orders not delivered when promised					
Number of recorded customer complaints					
Number of orders rejected by the customers during specific warranty period					
Suppliers					
Number of suppliers used for delivery of core products/services					
Delivery time					
People management					
Number of employees					
Number of managers					
Number of new employees					
Number of people who left the company					
Number of people who leave within six months of joining					
Absenteeism (number of days per year)					

D. Cluster support policy

D1. Are you sufficiently informed about various cluster support programs available in your region?

(please rate from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

Statement	1	2	3	4	5
We are well informed					
We are not well informed					

D2. Are you familiar with the following institutions and their activities/ programs for cluster and SME support and, if so, to what extent?
(please rate between 1= never heard of, 2 = heard of, but don't know what is their role, 3 = informed partially, 4 = informed, but not in detail and 5= informed in detail)

Institutions/ programs	1	2	3	4	5
National level					
Ministry of Economy					
Program for supporting of the competitiveness					
Program for export promotion					
Agency for Promotion of Entrepreneurship					
Agency for foreign Investment					
European Information and Correspondence Centre					
Other institutions/programs on national level (please specify_____)					
Local level					
Regional Enterprise Support Centres					
Other SME centers					
Business Incubators					
LED office in your municipality					
Local / regional consultancy firms					
Other institutions/programs on national level (please specify_____)					

D3. Have the specified policies, programs and measures been implemented in a consistent and sustainable manner?

(please rate from 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree to 5 = strongly agree)

	1	2	3	4	5
Coordination among various state bodies					
Staffing					
Political support					
Financial support					
Other (please specify)_____					

D4. Which forms of non-financial support do you think are important for a cluster to be successful?

(please rate from 1= not at all important, 2 = not important, 3 = neither important nor not important, 4 = important, 5 = very important)

	1	2	3	4	5
Information centers (providing information on loans, donors, support programs, investors, partners, websites, brochures, etc.)					
Training programs and on-the-job training (co-financed by the public authorities)					
Training of managers					
Resource centre for managers (managers to visit a company when needed, for instance, for marketing purposes)					
Business planning or re-structuring					
Incubators					
Technology parks					
Other (please specify):_____					

D5. How important have the following groups of persons or organisations been as a source of knowledge and skills for your enterprise in the past three years?

(please rate from 1=not at all important, 2= not important, 3=neither important nor not important, 4= important, 5=very important)

	1	2	3	4	5
In-house personnel already in the firm					
Recruitment of personnel with required new competences					
Auditors and banks					
Consultants					
Clients and/ or suppliers					
Other entrepreneurs (no business relations)					
Training centers					
Universities (public or private)					
Business and trade associations					
Public authorities					
Other groups (please specify)					

D6. Please indicate with which of the following organizations you had contacts over the last three years to get information on innovation

- Universities ☐
- Patenting institutions ☐
- Research laboratories ☐
- Consultants ☐
- Other (please specify) ☐

D7. How often the interactions within a cluster in your region have been facilitated through the following intermediary organisations?
(please rate between 1= always, 2 = 0ften, 3 = not so often, 4 = rarely and 5 = never)

	1	2	3	4	5

International Organisations/Donors					
Government Agencies					
Chambers of Commerce					
Business Associations					
Other (please state)_____					

D8. Please rate the overall assistance of the following cluster supporting organisations in your region/nation

(please rate from 1 = very good, 2 = good, 3 = average, 4 = poor, to 5 = very poor)

	1	2	3	4	5
United States Agency for International Development (USAID)					
German Organization for International Cooperation (GIZ)					
Italian Institute for Trade (ICHE)					
Other (please state)					

D9. How much do you trust the international cluster supporting organisations in relation of the following?

(please rank from 1 = strongly disagree, 2 = agree, 3 = neither disagree nor agree, 4 = agree, to 5 = strongly agree)

	1	2	3	4	5
International cluster support organisations generally has the managerial and technical competence to initiate and develop industrial clusters					
International cluster support organisations will always meet their commitments with the business community					

in the cluster development process, and will usually do more than is formally expected?					
International cluster support organisations are following the needs of business community, more than their own goals					

Feel free to tell us anything you wish regarding clusters and cluster development within your country

_____

_____

_____

_____

Please thick the box if you would like to receive a copy of the aggregated results from the research ☐

We sincerely appreciate your time and effort

Thank You for participating in our research.

13.3 Appendix C - Factor analysis

13.3.1 Factor analysis Question B3

According to the Rotated Component Matrix (See Table 13.1) the answers can be grouped in following two factors:

F1 – Trust and culture

F2 – Scope

That means that all of the questions could be replaced in principle with two. This also means that the relationships among the several factors within the same category or component can be a subject of separate research. The first group is related to trust and culture, while the common denominator for the second set of answers is scope (number of SMEs and geographical coverage). The components between the countries are more or less the same, with exception of Bulgaria, where the business climate is more related to the scope (number of SMEs and geographical coverage). The two components explain around 56% of the overall variance, while they explain 56% in Bulgaria, 64% in Republic of Macedonia (FYROM) and 61% in Serbia.

Table 13.1 Factor analysis QB3

Critical factors	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
There is a critical mass of SMEs in the	/	.795	/	.511	/	.777	/	.728
There is a geographical proximity of members	/	.763	/	.700	/	.821	/	.824
There is entrepreneurial culture in the region	.700	/	.697	/	.690	.463	.553	.526

There is appropriate culture of cooperation	.853	/	.913	/	.521	.527	.812	/
There is sufficient level of trust	.837	/	.895	/	.614	.507	.785	/
There is a governmental support	.614	/	.482	/	.763	/	.812	/
There is appropriate business climate	/	/	/	.729	.817	/	.509	/
Explained	55.558%		55.613 %		63.580%		60.564%	

13.3.2 Factor analysis Question B4

According to the Rotated Component Matrix the answers can be grouped in two groups for all of the countries together and for Bulgaria and Republic of Macedonia (FYROM) individually:

F1 – External barriers and

F2 – Internal barriers

The first group is related to internal barriers that are within the scope of influence of the surveyed companies (awareness, trust and cooperation) and the second one deals with external barriers that depend on external factors (legal framework, size of the market, policy). The two groups explain 62.131 % of the all three countries, 59.264 % for answers of Bulgarian companies and 67.151% of answers of companies from Republic of Macedonia (FYROM). For the surveyed companies in Serbia all of the barriers belong to one category and they do not distinguish between internal and external barriers. The results are presented in the following table.

Table 13.2 Factor analysis QB4

Barriers	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2

Lack of awareness about clusters	/	.764	/	.753	/	.758	.767	/
Lack of cooperation and trust between the stakeholders	/	.803	/	.658	/	.884	.640	/
Inappropriate legal framework	.661	/	.741	/	.579	.407	.708	/
Small market does not allow companies to focus on core competencies	.784	/	.512	-.567	.780	/	.553	/
Inappropriate cluster support policy	.704	/	.834	/	.806	/	.717	/
Explained	62.131 %		59.264%		67.151%		46.396%	

13.3.3 Factor analysis Question B4a

According to Component Matrix the variables of the question B4a correlate highly and no additional components can be extracted. They could well measure one underlying variable, with variance explained with around 82 % for all countries, 91 % for Bulgaria, 74 % for Republic of Macedonia (FYROM) and 74 % for Serbia.

Table 13.3 Factor analysis QB4a

Please exp. your opinion on the following statements about your coop. with other cluster members after joining your cluster	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
We have better relations with cluster members compared to the non-members	.873	/	.943	/	.828	/	.792	/
We enter easier into coop. or joint activities.	.934	/	.962	/	.898	/	.924	/

with cluster members than with non-members								
We enter into joint marketing activities easier with cluster members than non-members	.902	/	.964	/	.849	/	.867	/
Explained	81.576 %		91.421 %		73.722 %		74.428 %	

13.3.4 Factor analysis Question C1

The Component Matrix under the factor analysis indicates that the variables of the question C1 cannot be grouped in more than one component. The given variables correlate highly and they could well measure one underlying variable, with variance explained with around 80 % for all countries, 76 % for Bulgaria, 83 % for Republic of Macedonia (FYROM) and 79 % for Serbia.

Table 13.4 Factor analysis QC1

As a result of (not) being a cluster member my company is more:	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
competent	.881	/	.899	/	.924	/	.783	/
efficient	.926	/	.923	/	.919	/	.932	/
productive	.913	/	.903	/	.910	/	.937	/
cost effective	.868	/	.811	/	.863	/	.940	/
profitable	.907	/	.855	/	.934	/	.936	/
innovative	.856	/	.836	/	.904	/	.802	/
Explained	79.587 %		76.050 %		82.642 %		79.381 %	

13.3.5 Factor analysis Question C2

According to the Rotated Component Matrix the answers can be grouped in two groups:

F1 – Internal constraints that depend on internal capacities and

F2 – External constraints for business performance (access to finance, poor infrastructure and partly administrative regulations), which are more related to the

business environment. Those two components explain about more than 50% of the variances when analysing both, all countries together (68%) and each of the countries individually (Bulgaria – 53%, Republic of Macedonia (FYROM) – 57% and Serbia 58%). There is a consistency between the countries, which means that the constraints can be considered as internal and external more or less in all of them, with exception of Republic of Macedonia (FYROM), where access to finance is related to the internal constraints, such as skilled labor, technology, organization and quality management.

Table 13.5 Factor analysis QC2

Constraint factors	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
Lack of skilled labour	.556	/	.556	/	.693	/	.463	/
Access to finance	/	.495	/	.495	.634	/	.418	.565
Implementing new technology	.777	/	.777	/	.829	/	.793	/
Implementing new forms of organisation	.843	/	.843	/	.423	.636	.780	/
Quality management	.789	/	.789	/	.577	.484	.827	/
Administrative regulations	.461	.495	.461	.495	/	.887	/	.827
Infrastructure (road, gas, electricity, communication)	/	.774	/	.774	/	.613	/	.766
Explained	68.096%		52.553%		57.484		57.910%	

13.3.6 Factor analysis Question C3

Only in Bulgaria two components can be extracted regarding the access to different factors, necessary for cluster development and they can be explained with 58% of the variance. The variables in Bulgaria can be grouped around:

F1– Market related production factors (labor, raw materials, technology, customers) and

F2 – Support factors (finance, support institutions, information)

Table 13.6 Factor analysis QC3

Access to	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
financial resources	.716	/	/	.847	.741	/	.789	/
skilled labor	.789	/	.814	/	.750	/	.797	/
raw materials	.724	/	.848	/	.742	/	.654	/
supporting institutions	.734	/	/	.850	.744	/	.749	/
business partners	.849	/	.740	.453	.778	/	.908	/
information	.796	/	/	.804	.786	/	.860	/
technology	.827	/	.844	/	.796	/	.894	/
customers	.854	/	.851	/	.864	/	.869	/
Explained	62.057%		57.910%		60.237%		67.073%	

13.3.7 Factor analysis Question C4

According to the Rotated Component Matrix the variables answers can be grouped in two groups in Republic of Macedonia (FYROM) and Serbia following the same pattern. Component one consists of variables which are related to the positive statements, regarding cluster benefits, and Component 2 is related to the negative statements. In Bulgaria only one component has been extracted.

Table 13.7 Factor analysis QC4

Access to suppliers	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
Our company has better access to suppliers, since they are more concentrated in the cluster	.879	/	-.811	/	.935	/	.844	/
There is no particular change regarding the access to suppliers since we joined the cluster	/	.858	.812	/	/	.840	/	.833
The selection of our suppliers is mainly driven by price, regardless whether the supplier is cluster member or not	/	.866	.792	/	/	.827	/	.834
Suppliers that are members of the cluster have advantage over non-cluster members	.903	/	-.731	/	.922	/	.870	/
Explained	78.725%		61.944%		78.795%		72.706%	

13.3.8 Factor analysis Question C5

According to the Rotated Component Matrix the variables answers can be grouped in two groups in Serbia only. Component one consists of variables which are related to the positive statements, regarding cluster benefits, and Component 2 is related to the negative statements. In Bulgaria and Republic of Macedonia (FYROM) only one component has been extracted. In Serbia the two components explain 76 % of the variance.

Table 13.8 Factor analysis QC5

Access to finance	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
Our company has better access to financial institutions, since they are more concentrated in the cluster	.772	/	.851	/	-.654	/	.840	/
There is no particular change regarding the access to finance since we joined the cluster	-.820	/	-.845	/	.833	/	/	.775
The selection of our financial institution is mainly driven by quality and price of services price, regardless whether the financial institution is cluster member or not	-.654	/	-.699	/	.699	/	/	.893
Financial institutions that are members of the cluster have advantage over non-cluster members	.790	/	.857	/	-.725	/	.881	/
Explained	58.019%		66.557%		53.413%		75.788%	

13.3.9 Factor analysis Question C8

Separate factor analysis has been done for following groups of competitiveness indicators under the question C8;

- Main financial indicators
- Product and/or service innovation
- Customer satisfaction
- People management

According to the Rotated Component Matrix presented in the Table 13.9, only the variables provided under the main financial indicators can be grouped in more than one factor:

F1 – return of investments (turnover, profit, market share),

F2 – investments in the field of marketing, R&D and capital investments

The first group, component one, consists of indicators related to return of investments, such as turnover, profit, market share, while the second factor covers the variables related to investments in the field of marketing, Research and Development (R&D) and capital investments. Both of the components explain around 76% of the overall variance, 73% of the variance in Bulgaria, 58% of the variance in Republic of Macedonia (FYROM) and 60% of the variance in Serbia. The variables from the rest of the components are relatively homogeneous and cannot be grouped in more than one group.

Table 13.9 Factor analysis QC8

Competitiveness performance	Overall		Bulgaria		FYROM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
Main financial information								
Turnover (on domestic market)	.840	/	.867	/	.857	/	.838	/
Export turnover	.724	/	.619	/	.580	/	.805	/
Marketing expenditure	/	.840	/	.864	/	.657	/	.795
R&D expenditure	/	.878	/	.910	/	.789	/	.879
Capital investment	/	.599	/	.697	/	.608	.510	/
Pre-tax profit	.741	/	.875	/	/	.617	.624	/
Market share	.799	/	.878	/	.779	/	.674	/
Explained	65.383 %		72.897 %		57.753 %		59.776 %	
Product and/or service innovation								
Turnover from new products/services	.870	/	.868	/	.783	/	.921	/
Turnover from new market segments	.909	/	.914	/	.864	/	.930	/

Turnover from new geographical markets	.853	/	.882	/	.701	/	.892	/
Number of new customers	.854	/	.856	/	.863	/	.843	/
Explained	75.978 %		77.477 %		64.881 %		76.997%	
Customer satisfaction								
Number of customers	.948	/	.954	/	.917	/	.955	/
Number of orders received	.948	/	.954	/	.917	/	.955	/
Explained	89.842 %		90.954 %		84.141 %		91.260 %	
Suppliers								
Number of suppliers used for delivery of core products/services	.432	/	/	/	/	/	/	/
People management								
Number of employees	.922	/	.923	/	.911	/	.937	/
Number of managers	.748	/	.759	/	.712	/	.813	/
Number of new employees	.839	/	.869	/	.709	/	.894	/
Explained	70.421 %		72.735 %		61.307 %		77.920 %	

13.3.10 Factor analysis Question D2

Factor analysis has been conducted separately at national and local/regional level. According to Rotate Component Matrix the variables can be grouped in two components only in Serbia. One group covers the variables related to the regional SME supporting institutions, and the second is related to the local SME supporting institutions. This might be a result of the fact that local SME support institutions gained special importance in Serbia after the process of decentralization has been implemented. In Republic of Macedonia (FYROM), decentralized SME support institutions, have also become more visible with the decentralization process, but probably due to the small size of the country, the surveyed companies do not distinguish between local and regional. In Republic of Macedonia (FYROM) besides the Centres for Regional Development (CRDs), which are still not recognized by the business community as typical economic promotion organizations, there are almost no SME supporting institutions on regional level. The variance can be explained with around 70%.

Table 13.10 Factor analysis QD2

Familiarity with the institutions/programs	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
National level								
Ministry of Economy	.715	/	.633	/	.795	/	.773	/
Program for supporting competitiveness	.770	/	.795	/	.851	/	.730	/
Program for export promotion	.796	/	.865	/	.826	/	.751	/
Agency for Promotion of Entrepreneurship	.827	/	.890	/	.768	/	.812	/
Agency for Foreign Investments	.795	/	.848	/	.753	/	.776	/
European Information and Correspondence Centre	.771	/	.865	/	.768	/	.624	/
Explained	60.833%		67.351%		63.124%		55.734%	
Local level								
Regional Enterprise Support Centers	.828	/	.882	/	.830	/	.915	/
Other SME Centers	.866	/	.887	/	.880	/	.880	/
Business Incubators	.742	/	.788	/	.795	/	.483	/
LED office in your municipality	.779	/	.820	/	.796	/	/	.750
Local/regional consultancy firms	.765	/	.857	/	.783	/	/	.908
Explained	63.533%		71.837%		66.840%		69.717 %	

13.3.11 Factor analysis Question D3

The Component Matrix under the factor analysis indicates that the variables of the question D3 cannot be grouped in more than one component. (since only one component was extracted the solution cannot be rotated). The given variables correlate highly and they could well measure one underlying variable, with variance explained with around 75 % for all countries, 73 % for Bulgaria, 71 % for Republic of Macedonia (FYROM) and 83 % for Serbia.

Table 13.11 Factor analysis QD3

Have the following policies, programs and measures been implemented in a consistent and sustainable manner?	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
Coordination among various state bodies	.853	/	.832	/	.853	/	.896	/
Staffing	.870	/	.850	/	.807	/	.943	/
Political support	.882	/	.850	/	.865	/	.937	/
Financial support	.862	/	.876	/	.849	/	.863	/
Explained	75.164 %		72.591 %		71.190 %		82.884 %	

13.3.12 Factor analysis Question D4

According to the Rotated Component Matrix at least two groups can be extracted in all three countries together and each of the countries individually.

For all of the three countries the first component is related to the basic support services, such as training and provision of information, and component two consists of variables which are linked around more advance technology related services, such as business incubators and technology parks.

In Republic of Macedonia (FYROM), training of managers is more linked to the component two, which indicates that the training of managers is considered as more advanced service for SMEs.

In Bulgaria, the variables can be grouped in three components. The Bulgarian companies, consider Information centres as a factor that is separated from training and advanced, technology related services.

The identified components explain about around 66% of the overall variance, more than 83% in Bulgaria, around 66% in Republic of Macedonia (FYROM) and around 64% in Serbia.

Table 13.12 Factor analysis QD4

Forms of non-financial support	Overall		Bulgaria			RM		Serbia	
	F1	F2	F1	F2	F3	F1	F2	F1	F2
Information centers	.522	/	/	/	.967	/	.833	.521	/
Training programs and on-the-job training	.902	/	.786	/	.467	/	.823	.892	/
Training of managers	.838	/	.876	/	/	.707	/	.861	/
Business planning or restructuring	/	.710	.412	.740	/	.810	/	/	.479
Incubators	/	.862	/	.910	/	.705	/	/	.871
Technology parks	/	.853	/	.872	/	.806	/	/	.867
Explained	65.802%		83.465%			65.560%		63.862%	

13.3.13 Factor analysis Question D6

The Component Matrix under the factor analysis indicates that the variables of the question D6 cannot be grouped in more than one component. (since only one component was extracted the solution cannot be rotated). The given variables correlate highly and they could well measure one underlying variable, with variance explained with around 59 % for all countries, 56 % for Bulgaria, 63 % for Republic of Macedonia (FYROM) and 59 % for Serbia.

Table 13.13 Factor analysis QD6

How often your interactions within the cluster have been facilitated by the following organization?	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
International Organisations/Donors	.737	/	.757	/	.718	/	.703	/
Government Agencies	.693	/	.419	/	.834	/	.782	/
Chambers of Commerce	.803	/	.841	/	.777	/	.806	/
Business Associations	.833	/	.891	/	.844	/	.770	/
Explained	59.042 %		56.253 %		63.178 %		58.715 %	

13.3.14 Factor analysis Question D7

The Component Matrix under the factor analysis indicates that the variables of the question D7 cannot be grouped in more than one component. (since only one component was extracted the solution cannot be rotated). The given variables correlate highly and they could well measure one underlying variable, with variance explained with around 68 % for all countries, 68 % for Bulgaria, 76 % for Republic of Macedonia (FYROM) and 61 % for Serbia.

Table 13.14 Factor analysis QD7

Please rate the overall support of the following int. organisations in your country	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2
United States Agency for International Development (USAID)	.863	/	.819	/	.883	/	.878	/
German Organization for International (GIZ)	.818	/	.844	/	.909	/	.721	/
Italian Institute for Trade (ICHE)	.785	/	.817	/	.825	/	.726	/
Explained	67.699 %		68.375 %		76.220 %		60.556 %	

13.3.15 Factor analysis Question D8

The Component Matrix under the factor analysis indicates that the variables of the question D8 cannot be grouped in more than one component. (since only one component was extracted the solution cannot be rotated). The given variables correlate highly and they could well measure one underlying variable, with variance explained with around 64 % for all countries, 64 % for Bulgaria, 49 % for Republic of Macedonia (FYROM) and 71 % for Serbia.

Table 13.15 Factor analysis QD2

How much do you trust the international organisations in relation of the following?	Overall		Bulgaria		RM		Serbia	
	F1	F2	F1	F2	F1	F2	F1	F2

Inter. Organ. generally have the managerial and tech. competence to support clusters	.718	/	.780	/	.403	/	.768	/
Inter. cluster support org. always meet their commit. and even prov. more than expected	.872	/	.897	/	.813	/	.901	/
Inter. clust. support organ. follow the needs of the business, more than their own goals	.801	/	.718	/	.811	/	.860	/
Explained	63.904 %		64.237 %		49.373 %		71.353 %	