LAPPEENRANTA UNIVERSITY OF TECHNOLOGY
Department of Industrial Engineering and Management

MASTER'S THESIS

REGIONAL INNOVATION POLICY: EFFECT ON SMES IN FIVE EU-REGIONS

The subject of this thesis has been approved by the council of the Department of Industrial Engineering and Management in the meeting on 15 November 2006.

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For four and a half years ago, as I started my studies in Lappeenranta, I had goal that seemed to be far away in the future. Now I have reached the goal and it is time to conclude the career as a student for the present. Many people have supported me and I want to express my gratitude to them.

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Completing the master's thesis is just the tip of the iceberg of my studies so far. Special words of thanks for the lifelong support belong to my family, especially to my mother and sister, two "superwomen", who have encouraged me to trust myself and rise to challenges. I also want to thank my tremendous friends for making the time in Lappeenranta fond and worth remembering. Especial compliments I dedicate to my dear Matias: You always succeed in motivating and supporting me when needed and make me smile despite difficulties. Thank you.

I have now reached something I have dreamed about but nonetheless hope not to stay in place. This is just an opening of new apprenticeship and new challenges. As Johann Wolfgang von Goethe has written:

"We must always change, renew, rejuvenate ourselves; otherwise we harden."

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ABSTRACT

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Major part of the European companies can be classified as SMEs but even then the effect of regional innovation on SMEs is not too researched area. The main object of this study is to take an overview on the SMEs' outlook on the innovation policy of their home regions in five regions located in the area of EU.

The questionnaire of the study, which depicts regional innovation policy, was assembled based on the literature review. A group of SMEs from the five regions responded to the questionnaire after which the results were described graphically. In addition, a survey probing explanatory factors to companies' responses and connections between responses was carried out. The research approach was mainly quantitative.

The study indicates that there remains much to be developed in regional innovation policy so that it would extensively reach SMEs. The awareness of SMEs should be remedied as they do not basically seem to consider regional innovation policy as a factor contributing to success or related co-operational possibilities important to their own activities. Differences on the regional role of innovation came forward in the study. There were discovered factors which could explicate the companies' responses, as well as some relations between the responses. However, to be able to make actual conclusions, more expansive research would be required.

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Valtaosa eurooppalaisista yrityksistä on pk-yrityksiä, mutta tästä huolimatta seudullisen innovaatiopolitiikan vaikutusta juuri pk-yrityksiin on tutkittu melko vähän. Tämän tutkimuksen tarkoituksena on luoda yleiskuva pk-yritysten näkemykseen oman seutunsa innovaatiopolitiikasta viidellä EU:n alueella sijaitsevalla seudulla.

Kirjallisuuden perusteella rakennettiin seudullista innovaatiopolitiikkaa kuvaava kysely, johon joukko pk-yrityksiä viideltä seudulta vastasi. Kyselyn tulokset kuvailtiin graafisesti, minkä lisäksi etsittiin vastauksiin vaikuttaneita tekijöitä ja yhteyksiä yritysten vastausten välillä. Tutkimus oli luonteeltaan lähinnä kvantitatiivinen.

Tutkimus osoittaa, että seudullisessa innovaatiopolitiikassa on vielä paljon kehitettävää, jotta se tavoittaisi kattavasti pk-yritykset. Pk-yritysten tietoisuutta tulisi lisätä, sillä nämä eivät yleisesti ottaen näytä pitävän seudullista innovaatiopolitiikkaa menetykseen vaikuttavana tekijänä tai siihen liittyviä yhteistyömahdollisuuksia tärkeinä omalle toiminnalleen. Erot innovaatiotoiminnan seudullisessa roolissa tulivat esiin tuloksissa. Yritysten vastauksia selittäviä tekijöitä löydettiin, samoin yhteyksiä vastausten välillä, mutta varsinaisten johtopäätösten tekeminen edellyttänee laajempaa tutkimusta.

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ABBREVIATIONS

BIT	Blekinge Institute of Technology
EU	European Union
GDP	Gross Domestic Product
ICT	Information and Communication Technology
LUT	Lappeenranta University of Technology
MERIPA	Methodology for European Regional Innovation Policy Assessment
n	Number of observations in a subset
N	Number of observation in the total sample
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
RINNO	Resource for Regional Innovation & Technology Transfer
RTD	Research and Technological Development
SME	Small and medium-sized enterprise
SPSS	Statistical Package for the Social Sciences, statistical analysis program

1 INTRODUCTION

1.1 Overview

This study is a part of the MERIPA (Methodology for European Regional Innovation Policy Assessment) project. The MERIPA project is member of the Innovating Regions in Europe Network, supported by the European Commission's Directorate-General for Enterprise and Industry as part of the Innovation and SMEs programme. The general objective of the MERIPA project is to develop a comprehensive and consistent methodology for assessing regional policies on research and innovation, which enables improving the regional understanding of effective innovation policy measures in a European context. In consequence with this, a range of benchmarking indicators will be devised and a benchmarking tool developed in order to provide for the trans-regional comparison of the impact of different strategies and policies on innovation performance. (MERIPA a 2006)

The project builds on cooperation and experience of five European regions (North Jutland in Denmark, Blekinge in Sweden, Kouvola in Finland, Vilnius in Lithuania and Emilia-Romagna in Italy), three European universities, among others Lappeenranta University of Technology, and technological development agencies. Further, the project aims to subsume the business communities in all participating regions. Thus, the MERIPA project takes an integrated approach to regional development by bringing together actors from different sectors across European regions. (MERIPA b 2006, p. 4) One sub-goal of the project was to perform a survey in five partner regions concerning SMEs' views and relation to regional innovation policy, which necessitated this study.

The significance of advancing innovation activities when developing the regions and economical environments is increasing constantly and many regions have thus delineated innovation related policies and strategies. As these policies have been formulated and built up with a view to enrich and intensify operational preconditions of the enterprises in regions, it is engrossing to explore if these objectives have really became concrete. This study is aimed at clarifying the relation between SMEs and the regional innovation policy on their home regions in the confines of the European Union. Large-scale companies are

often conscious of supportive policies and strategies and therefore quite able to utilizing the advantages offered by them, but when it comes to small and medium-sized enterprises the awareness and effects of the policies are inconsistent. In view of the fact that 99 % of companies in the area of EU are categorized as SMEs (according to EU, 2006), should innovation policies and strategies contrive to target their actions and sequential benefits on SMEs.

Relationship between SMEs and regional innovation policy in not extensively covered research area although regional innovation policy and SMEs have research targets independently. For example, Tödling and Kaufmann (2002) and North et al. (2001) have studied the role of public support on innovations, directed to SMEs.

1.2 Objectives and Restrictions

The study leads up to chart realized consequences of innovation policies from the SMEs' point of view and in addition to clarify the implication of company-characterized factors for the differences in experiences. Along there is a goal of exploring the effect of public innovation-related support and regional conditions on the company achievements. The main research questions of the study can be phrased as follows:

What are the regional differences in the general overview of SMEs on the regional innovation policy?

How do the characteristics of the companies, such as age, net sales and number of employees, affect on their outlook of regional innovation policy?

How does the support of public institutions on innovation development affect on the achievements of the companies?

What is the connection between the outcomes of the regional innovation policy: the regional conditions and companies' achievements contributed by the regional innovation policy?

The theoretical framework has predominately a European standpoint as the MERIPA project is firmly EU-bonded. The regions in the survey are the five partner regions operating in the MERIPA, too. These regions diverge from each other quite a lot in terms of area, population, nature, lines of business and existing strategies and in addition represent countries in a repertoire from a founding member of EU (Italy) to a new member (Lithuania).

Innovation policy is a wide and complex concept. The scale of the study at issue does not lead up to give an all-out image of the role of the regional innovation policy in the activities of SMEs or their outlook on the policies but highlights a general overview of the current situation.

1.3 Structure of the Thesis

The structure of the thesis is presented in figure 1. Elemental theory, in chapters 2-5, is needed in order to be capable of choosing the most descriptive variables for the survey and analyzing the results as well as understanding the conclusions of the study. Chapters 2 and 3 represent the basic theory of innovations and regionality, from a suitable viewpoint to cater for the nature of the study. Chapters 4-5 focus on the specific theory concerning innovation policy and SMEs. Theoretical contribution in chapters 4 and 5, as is the way with the entire study, is pronouncedly concentrated on the European context by the courtesy of the project. Chapters 6 and 7 form the empirical part of the study where the survey data is described and analyzed. Finally, conclusions of the study are made.

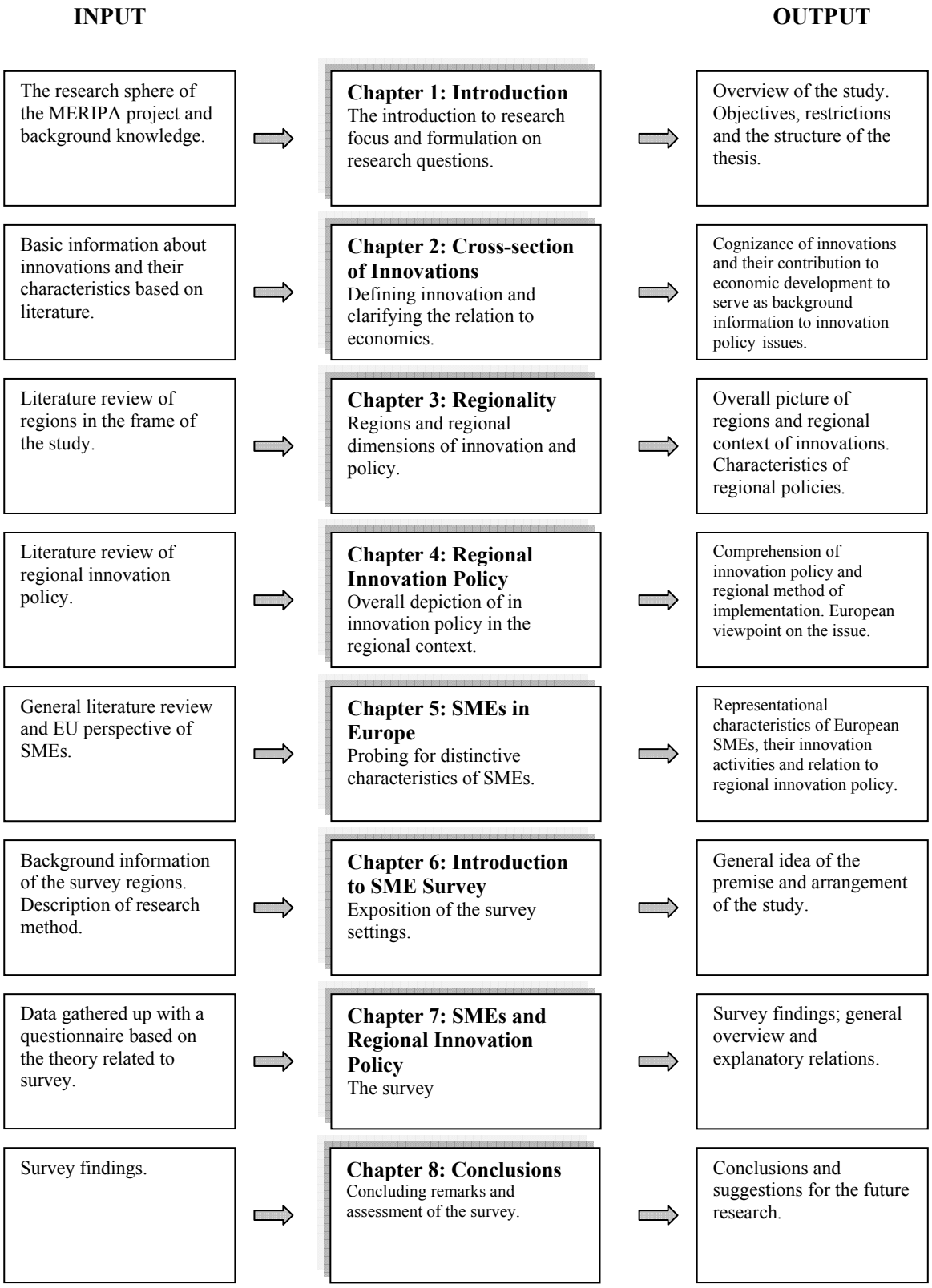

Figure 1. The structure of the thesis.

2 CROSS-SECTION OF INNOVATIONS

2.1 Defining the Idea of Innovation

Dosi (1988, p. 222) gave the following definition of innovation: *"In an essential sense, innovation concerns the search for, and the discovery, experimentation, development, imitation, and adoption of new products, new production processes and new organizational set-ups".*

The basic reason for innovation is the need to change something. Usually the change equates to product or business improvement, but sometimes this change needs to be more fundamental. Innovation is the business process for creating new or improved, insightful ideas and bringing them successfully to market. Ideas can be related to products, processes, materials and services. The inspirational part of innovation is remarkable, but the essence of effective innovation is managing efficiently the whole process from idea to market. Typically, the process is represented in a company by a number of formally organized laboratories, departments, groups, teams and functions. (Ettlie 2000, p. 5; Verloop 2004, pp. xvii, 20)

There are innovations that spring suddenly, from a flash of idea. Most innovations, however, especially the successful ones, result from purposeful search of innovation opportunities. Such areas of opportunities can be classified as follows (Drucker 1991, p. 3):

Within a company

1. Unexpected occurrences
2. Incongruities
3. Process needs
4. Industry and market changes

Outside a company

1. Demographic changes
2. Changes in perception
3. New knowledge

Lambooy (2005, p. 1142) defines innovation as a result of an iterative process of interaction between individuals, organizations (e.g. companies or universities), systems, and institutions, using signals, such as price signals, to find the directions in which to develop. It is the result of both individual actions and the interaction with markets, organizations, systems, and institutions etc. According to this theory innovation can revolutionize organizations and markets, or alter them only marginally. Thus, the opportunities for innovation can be analyzed from the following perspectives (Lambooy 2005, p. 1142):

1. *Firms and other organizations* (R&D process, selection and diffusion): within small or large companies and organizations, as well as diffusion to other organizations, to be applied in products.
2. *Systems*: sectors, networks, regions, nations and social systems.
3. *Institutions*: culture, educational values and resistance to change.
4. *Individuals*: cognitive abilities, entrepreneurship, attitude towards risk and competence to cooperate.

Innovation covers a wide spectrum of business opportunities which are based on new technology (or other corresponding solution) or market combinations, ranging from minor improvements to an existing product. It is reasonable to expect that innovation process may differ for these two extreme occurrences and factors, such as type of product and or the dynamics of the market, can effect to the process. Table 1 represents one possible classification of innovation types based on several factors.

Table 1. The standard classification of innovations (Verloop 2004, p. 21)

	Service Process Product Component Material
Incremental	Modifications, refinements, enhancements, simplification
Discontinuous	Obsoletes technologies, processes, people
Architectural	Changes, core design concept to new architecture
Systems	Dominated by societal and government regulations
Radical	Develops into major new businesses or spawns an industry
Disruptive	Brings the user a new value proposition
Breakthrough	Moments in history that set stage for future

The following model (figure 2), for one, is a simplified but quite often used. This model is based on the rare product-process –division and confines itself merely to practical features of innovation.

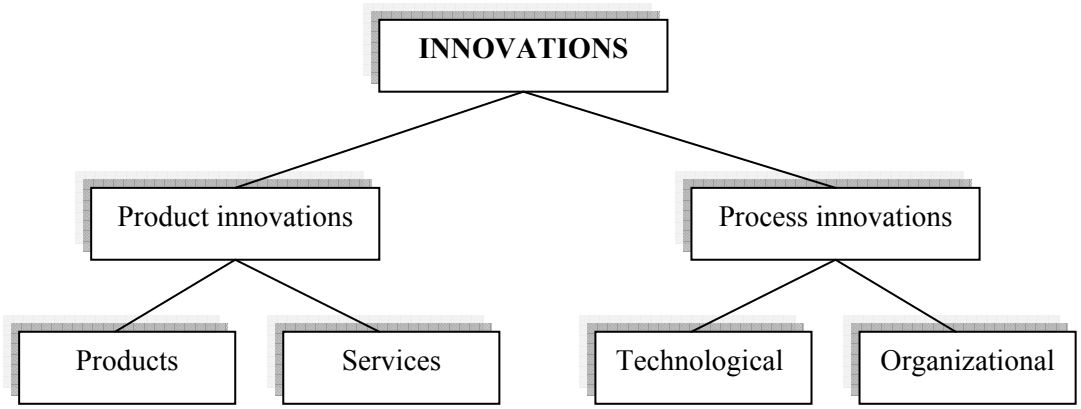

Figure 2. Categorization of innovations by the product/process characters (Norden 2004, p. 21)

2.2 Innovations and Economic Development

Econometric methods have indicated that innovations and new products might be one of the key factors related to acceleration of the growth of companies (Lehtoranta & Uusikylä 2005, p. 2). Thereupon, it has been recognized that innovation is the key to economic development especially for advanced, high-wage countries (Nauwelaers & Wintjes 2002, p. 201). In addition, the importance of science in creating and sustaining wealth, yielding in turn much wider social, cultural and economic benefits, is stressed. Etzkowitz and Klofsten (2005, p. 243) suggest that the common objective of knowledge-based economic development everywhere in the world is the creation of an 'Innovating Region'. According to them, an innovating region has the capability to move across technological paradigms and periodically renew itself through new technologies or products and firms generated from its academic base.

In theoretical terms, the linkages between innovation, knowledge and economic growth has been acknowledged for a long time. There has been recognition that, directly and

indirectly, knowledge changes economic activity and economic activity, for one, changes knowledge in constant rounds of change. (Howells 2005, p. 1221) Florida (2004, p. 124) emphasizes the strong connection between creativity, innovation and economic growth: *"In today's economy, creativity and competitiveness go hand in hand".*

When the linkage between innovation and economic growth is considered in empirical micro level, there does appear to be a continuing connection between them. At the European level, according to the RINNO database based on Innovation Scoreboard data for 2002, there is a clear correlation between innovation and economic activity and performance (innovation is measured as "revealed regional summary innovation index" and economic performance as GDP). Figure 3 evidences this link for selected regions across Europe. (Howells 2005, p. 1222)

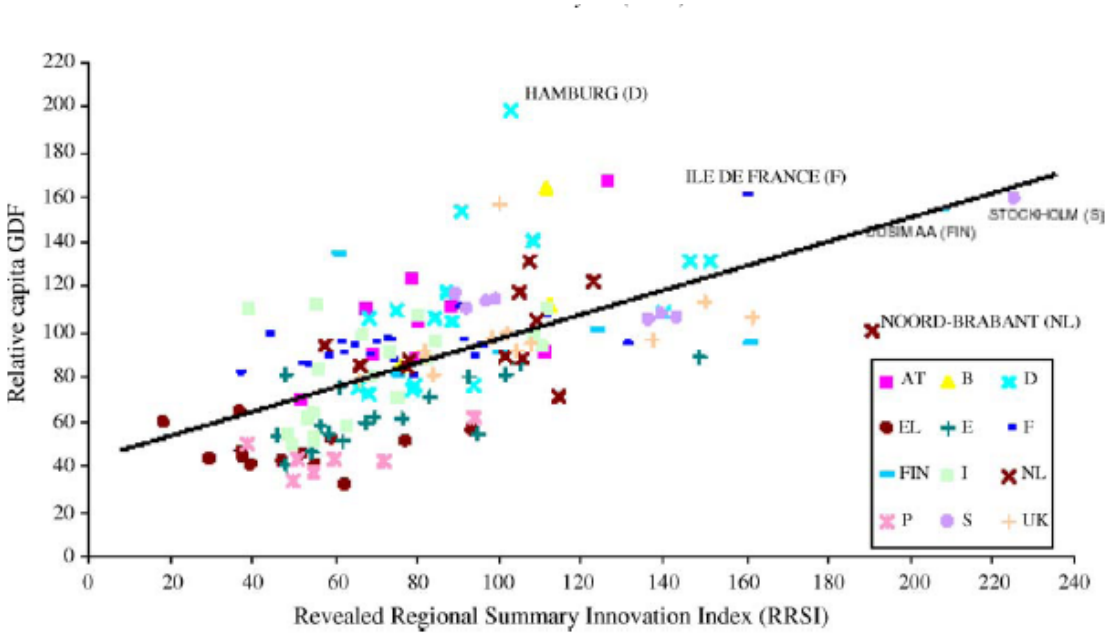

Figure 3. Innovative and Economic Performance on a Regional Level: EU. (Howells 2005, p. 1222)

The interrelation of regional development and innovation has been also recognized in regional policy-making, both at the national and the European level. Many activities, especially those originated from EU, to support regional development have a strong focus on improving innovation performance. Support can be steered directly to RTD projects or indirectly to upgrade innovation-related infrastructure. Structural change, leading to a higher share of competitive companies and thus to economic advancement, is nearly

impossible without an innovative business sector. Kaufmann and Wagner (2005, p. 583) suggest the structural change to be to a large extent endogenous, being result of two processes, start-ups and changes in business activity. Figure 4 represents the alternative ways of structural change of an economy and the role of innovations in this process, calling the decreasing sector "mature" and the increasing one "modern". (Kaufmann & Wagner 2005, pp. 583-584)

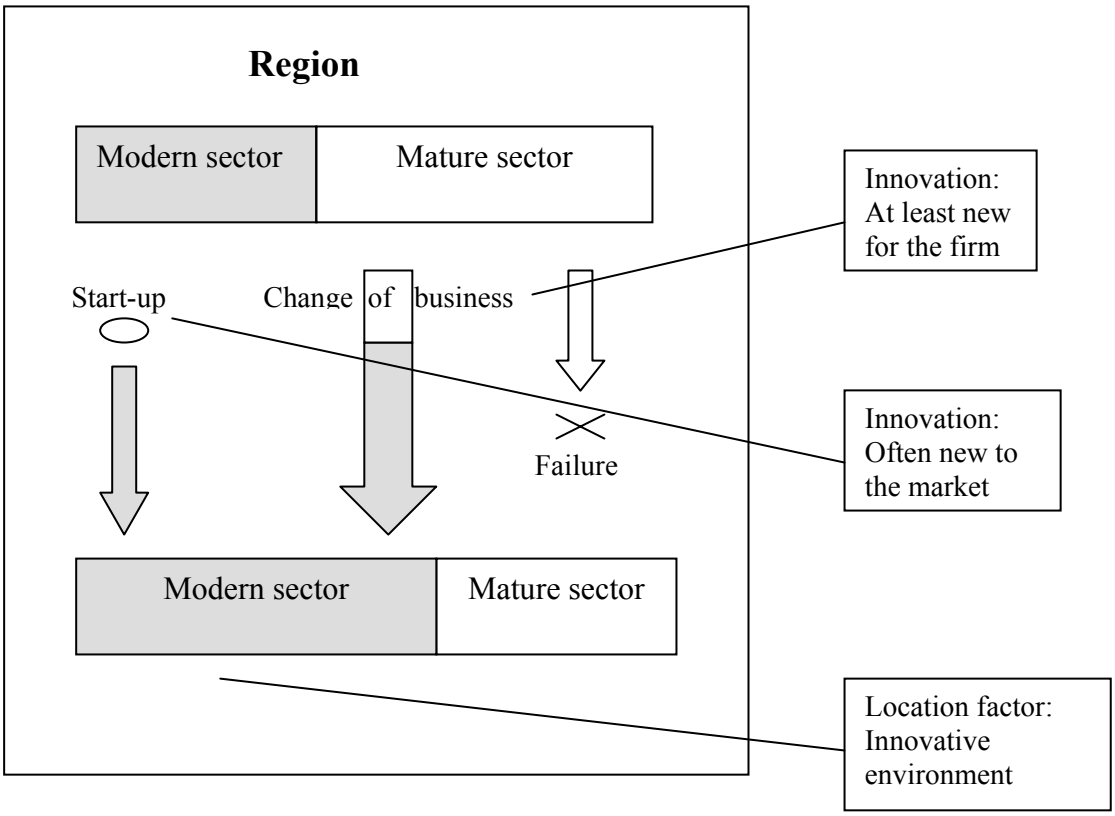

Figure 4. Structural change in a region's economy and the role of innovation (Adapted from Kaufmann & Wagner 2005, p. 583)

3 REGIONALITY

3.1 Question of Regions

The study of regions and regionalism as concept has certainly turned out to be a boom topic. It is both intellectual and political fashion to allude that Europe is moving towards "Europe of regions". This view is, undoubtedly, encouraged by the European Commission, which might be suggested to have an institutional interest in development of a new level of legitimate government, as a means of by-passing the member states. (Le Galès & Lequesne 1998, p. vii)

The word region has a wide range of meanings in the various disciplines of social sciences and in the historical tradition of European countries. There is consensus that the term refers to space, but the concept of space itself can have several meanings: territorial space, political space and the space of social interaction, economic space, and functional space. A region is the result of the meeting of various notions of space. It is also an institutional system, either in the form of regional government or as a group on institutions on a territory. (Keating 1998, p. 11)

It is a typical characteristic of the region to have neither a definition nor an outline. The empirical criteria which allow the socio-economic entity to be recognized as homogenous and distinct enough are uncertain and mixed. The term region serves to denote sub-national formations, intermediaries between the local and the national levels within the state, various co-operation zones, entire subcontinents and trans-border areas between several sub-national regions belonging to different states. In order to clarify the term, the five following levels of "*regioness*" can be differentiated (Smouts 1998, pp. 30-31):

1. The region as a geographical and ecological unit delimited by natural barriers.
2. The region as a more or less definite social system of cultural, political and economic interaction.

3. The region as an organized co-operation in cultural, economic, and political or military fields, institutionalized by the multilateral regional organizations.
4. The region as a civil society emerging from a culture, social communication and the convergence of values.
5. The region as a historical formation of a distinct identity acting as a political actor and endowed with a certain level of legitimacy (such as European Union).

Notionally, regions can be defined in terms of shared normative interests, economic specificity and administrative homogeneity. In addition to these, there may be such criteria as non-specific size; particular homogeneity in terms of criteria such as geography, political allegiance and cultural or industrial mix; ability to distinguish from other areas by these criteria at issue; and occupancy of internal cohesion characteristics. (Cooke 1998, p. 15)

Another approach is to review regions as units situated hierarchically between the central government of the state and the local administration. In Europe, regions are distinguished mainly by population and size of area but as well as by governmental pursuit, economical structure and degree of autonomy are unequal in different regions. Regions can originate from cultural or some other special characteristics or because of administrative determination of boundaries. (Niemi & Salminen 2005, p. 11)

3.2 Regional Dimension of Innovation

The regional system of innovation is a concept providing the substrate when it comes to regionality of innovations (Kostiainen 2002, p. 80). Pohlmann (2005, p. 15) represents the regional innovation system as an important model of innovation. The hypothesis of this model is that the *"social space"* of the region can form an innovative milieu, which exhorts the emergence of innovative structures.

Basically the regional innovation system is a combination of innovative networks and institutions located in a certain geographic are, with regular and strong internal interaction that promotes the innovativeness of the companies in the region. The significance of the institutional framework surrounding a company originates from its capacity to support the innovativeness of the company. Agents operating in a regional innovation system include research institutions, organizations involved in technology transfer, technology centers, investors, financiers of R&D and regional development organizations. (Kostiainen 2002, p. 80)

A stock of knowledge and the learning ability in the regional (industrial) milieu can be important factor in stimulating the innovation capability of firms and regions are therefore more generally seen as an important unit of economic co-ordination (Asheim & Isaksen 2003, p. 41). The region is increasingly the level where innovation is produced through regional networks of innovators, clusters and favorable effects of research institutions (Lundvall & Borrás 1999, p. 39). Thus, several factors weigh in on the regional dimension of innovation processes (Asheim & Isaksen 2003, p. 41):

1. Industrial clusters are in many cases localized
2. Educational institutions and research organizations are often tied to specific regions
3. Interaction between firms and knowledge providers, knowledge spillovers and spin-offs is often localized
4. A common organizational and technical culture may develop to support learning and innovativeness
5. Regional public institutions seem to become more active in supporting technology transfer and innovation activity

The general indicators, drawn from the recent theoretical and empirical literature, state that the process of technological accumulation takes place at local or regional level, even in the era of globalization. In addition, spillovers of knowledge tend to be highly concentrated at the geographical level. (Evangelista et al. 2001, p. 733) According to Rondé and Hussler (2005, p. 1163) the engine of regional innovativeness seems to reside in the relationships developed between the actors within the territory. Their analysis of

the regional determinants of innovation highlights the significant impact of relational competences, and confirms the idea that the (regional) networking capability is an enhancer of innovation.

3.3 Regionality in Terms of Policy

Keating (1998, p. 18) states that regional space can be divided into territorial space, functional space and political space. According to this theory political space means space recognized by political actors in which decisions are taken and then legitimated. Keating (1998, pp. 26-27) also classifies policy-making capacity to be one dimension of the power of regions. Regions with a political system, a decision making capability and ability to legitimately establish a "regional interest" can gain from this feature compared to regions which lack this unity of action and are reduced to being simply relays of other systems of actions.

Regionalization of policy can mean a variety of things. This becomes especially clear when regarding different elements of policy that could be regionalized. In order to illumine the variety of possibilities of policy regionalization, it is helpful to distinguish between policy objectives, the level of operation, the instruments, the way of administration, allocation of decision competencies and finance. The itemization is represented in table 2. The objective of a policy may be achievement of a national goal or of particular regional character and can be operated nation-wide or in certain regions only. If a policy is operated in several regions, the instruments in use may be either region-specific or identical in all regions. Administration can be entirely at a central level, completely within the regions or then distributed between both levels. Decision competencies may be entirely assigned to the national-level actors in the regions or split up among them. The funds required for the policy can be raised completely in the region, come from the central government or be shared between these levels. (Fritsch & Stephan 2005, p. 1124)

Table 2. The meaning of regionalization for different policy elements (Fritsch & Stephan 2005, p. 1124)

Policy element	Meaning of regionalization
Objectives	Region-specific objectives vs. nation-wide
Operation	In certain regions only vs. nation-wide
Instruments	Differentiated by region vs. identical in all regions
Administration	Within regions vs. at central level
Decision competencies	Regional authorities vs. central body
Finance	From within the region vs. from central level

4 REGIONAL INNOVATION POLICY

4.1 Concept of Innovation Policy

Traditionally innovation policy is seen as the governmental field of activities aiming to impact on transformation of technological change. Hence, the central content is considered to be supporting research and development work and promoting innovations. Lately, this constricted definition has been replaced with a more expansive explication of innovation policy which encompasses several factor related to operational preconditions of enterprises and other organizations. From the perspective of market economy, innovation policy comes down to governmental intervention, the interference of state in order to affect the market mechanism. (Lemola 2006, pp. 13-14). Figure 5 clarifies the changes of focus and direction occurred in research and innovation policies in OECD countries.

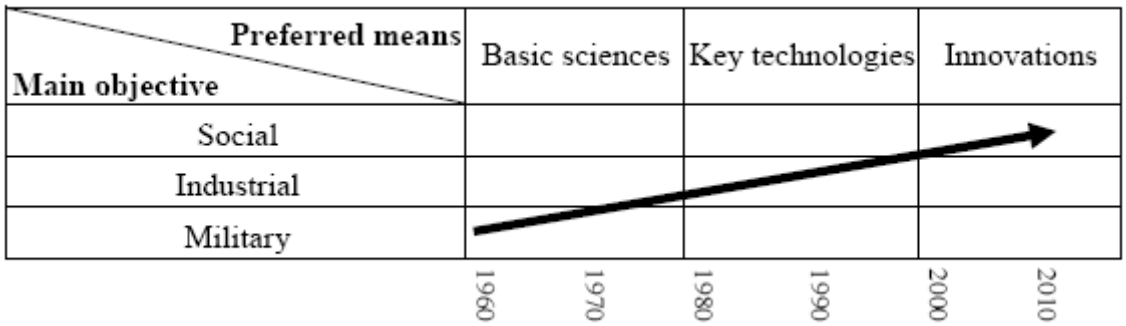

Figure 5. Research and innovation policies in the OECD countries (Caracostas & Muldur 1998, p. 17)

Innovation policy can establish conditions to stimulate innovation, in which enterprises, big and small alike, are able to make the most of their entrepreneurial aptitude as well as know-how. Good innovation policy enables firms to find the elements they need for successful business: technology, knowledge and finance. In addition, good policy encourages enterprises to identify and develop new market opportunities, fosters links between science and industry; it facilitates technology transfer. It is prominent, however,

that there is more to innovation than technology and thus a stronger emphasis on non-technological innovation has been highlighted lately. (Verheugen 2005, p. 7)

According to Ståhle and Sotarauta (2003, p. 120) innovation policies encompass the five following main objects of development:

1. Developing human resources
2. Developing new forms of organizations
3. Creating innovative networks
4. Directing the innovation policy increasingly on service sector
5. Integrating educational actors (universities, polytechnics etc.) into innovation processes

Innovation policy is effective only when the actions directed on the fields of policy concerned are coordinated in such a way that consequential completeness can be emerged (Sitra 2002, p. 39). Lemola and Honkanen (2004, p. 11) remind that main part of innovations come about regardless of policies, i.e. no regional or governmental actions have direct impact on emerging process of innovation. In practice, however, policies are a crucial part of the operational environment and their implication can not be totally separated.

4.2 Approaches to Innovation Policy

Innovation policy can be understood as a combination of science, technology and industrial policies. In this context innovation policy is regarded as broader than any of the other policies. It also has other elements, such as environmental and energy related. The general aim of the policy is to utilize the innovation potential even in sectors of economy that are not usually innovative or innovation-intensive. (Kotilainen 2005, p. 77) Expedients to strive these aims are mainly promoting the development, spread and efficient use of new products, processes and services in market on in public and private organizations. Other main fields of actions comprise matters related to funding new, innovative firms and regulations concerning protection of inventions and implementation

of new technologies as well as influencing both the internal and external competitiveness of firms. Hence, the main focus is on the influence on economic performance and social cohesion. (Lundvall & Borrás 1999, p. 37; Lievonen & Lemola 2004, p. 15)

According to wider approach (figure 6), innovation policy is considered as a concept which contains research and technology policy and overlaps with environmental, industrial, social and labor policies (Kuhlmann & Edler 2003, p. 620). In practice, innovation policy consists of all the public decision making having an influence on emerging of innovations and promoting (or in some cases, restricting) innovation activities (Lemola & Honkanen 2004, p. 11).

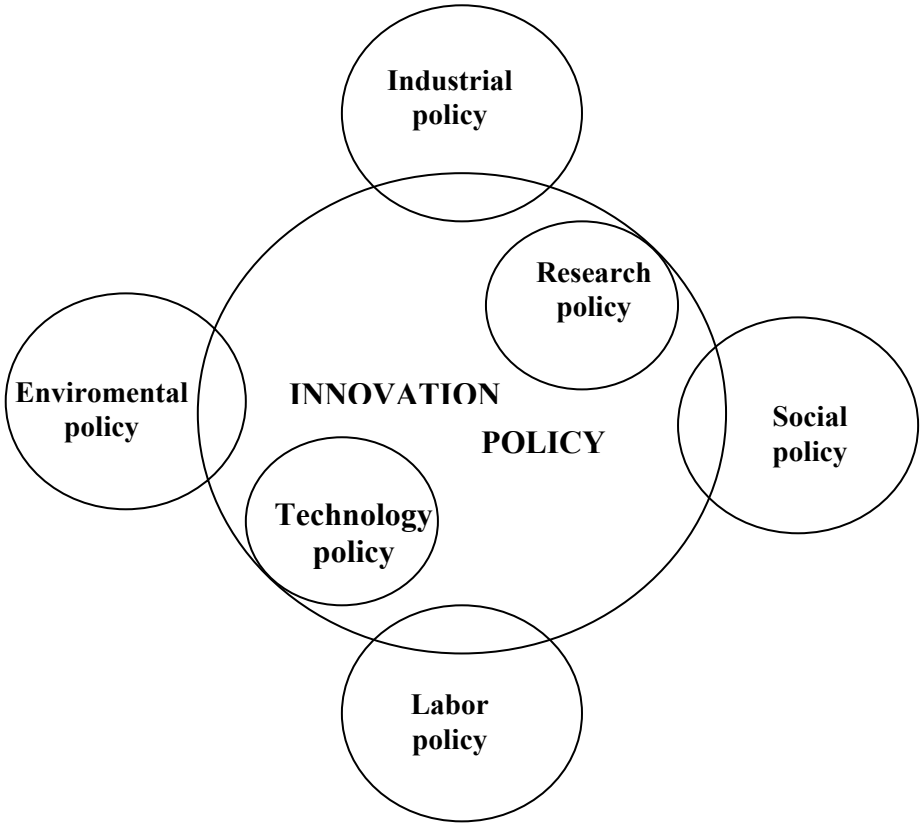

Figure 6. A Wide approach to innovation policy

According to Lundvall and Borrás (1999, p. 37) innovation policy consists of three main parts. The first part includes policies which aim to level the conditions for competition between firms and countries, such as competition policy. These policies are mainly international, for example performed at the EU level. The second part is policies affecting

the capability to innovate and acquire changes in conditions, such as human resource development and more narrow innovation policies supporting innovation capacity of enterprises. The national level is the most important factor in this policy area, though the regional level might play a role. The third part includes policies designed to take care of losers in the game of change, a form of re-distributive policy.

The view of Rolfo and Calabrese (2003, pp. 254-255) is quite technology-driven. They suggest that innovation policy embraces three following main types of support policies:

1. *Mission policies* consist of financial support for research into cutting-edge technologies in research institutes of firms. The principal objectives of these policies are to concentrate state financial resources on both basic research and on applied search at level before actual competition.
2. *Diffusion and technology transfer policies* are probably the most traditional initiatives. Originally they were based on grants through subsidies or tax credits for the purchase of new machinery or equipment in order to incorporate innovations. The recent objectives are, however, the promotion of research and collaboration and creation of new firms.
3. *Infrastructural policies* lead up to offering the technological capability for variety of applications for companies and institutions.

4.3 Regionalized Implementation of Innovation Policy

Globalization and diminishing significance of physical distances apparently suggest a declining role for regional aspects of innovation activities. However, there is a detectable growing view that innovation processes have a pronounced regional dimension and that the relevance of region-specific factors for innovation process is increasing. (Regional Innovation Policy 2005, p. 495) Regional dimension has attained political clout as regions have occurred as key players for determining national success in the increasingly globalized economy. This seems to be due to the fact that externalities and increasing returns, main drivers of growth and economic development, come up at the regional and local level. (Nischalke & Schöllmann 2005, p. 560)

The concept of innovation is grandiosely based on the success of not only the specialized industrial agglomerations, but in addition regionally concentrated networks of SMEs and industrial clusters. Evidences of learning process and knowledge transfer being highly localized in many cases have come to light. It is increasingly conceded that all the important elements of innovation processes should be regionalized. (Doloreux & Parto 2005, pp. 135-136) In this connection regionalizing the policy and political actions fastened on innovation seems to be very reasonable, too. Doloreux and Parto (2004, p. 10) state that the main justification for specifically targeted policy actions in the context of regional innovations is to concentrate on remedying performance and competence of regional companies, as well as enriching the business environment in the region.

Regional innovation policy comprises those targets and actions which are executed on national and regional level as well as in their co-operation in order to enhance innovation activities on geographically defined areas. By means of regional innovation related policies it is possible to boost positive, self-strengthening development of business around the companies. (Lemola 2006, pp. 14, 22). The role of the regions has changed from being objectives of state-led regional policies to the actors of competitiveness policies, where their role and responsibility has increased. In the current multi-level governance structure, the regions meet new expectancies to take initiatives to build a perfect competitive advantage for themselves. (Harmaakorpi & Uotila 2006, p. 781)

According to Asheim and Isaksen (2003, pp. 21-22), there can be perceived two main arguments for the regionalized innovation policy. The first is the heterogeneity of regions. As the regional differences are outstanding, one collective set of policy instruments which suits all types of regions can not be found. In order to be effective, policies must be formulated for and adjusted to differences in regional circumstances. Regional level of innovation policy can secure the best knowledge of the varying regional conditions. The second argument is premised on the outlook according to which innovation is a territorial phenomenon and consequently stimulated by co-operation between local players and place-specific resources. This argument about human relationships and particular regional resources hastening innovation processes might be considered the most important argument for the regionalization of innovation policy.

Fritsch and Stephan (2005, pp. 1123-1124) introduce several reasons to assume that to regionalize innovation policy may have advantages: *First*, innovation processes are not spread evenly across countries or other spaces, but they are concentrated in certain regions. Due to this emphatic regional dimension of innovation processes, it may be advantageous to give national policy at least regional orientation in order to achieve goals of national level more effectively. *Second*, there are not only regional differences when it comes to the amount or share of innovation activity, but also in the way in which regional innovation systems function. Hence, a "one-size-fits all" approach to innovation policy is not appropriate and probably not efficient. *Third*, as innovation activity is key importance for economic development, it may constitute an important starting point of a policy which is aiming at stimulation of regional development. Hence, promotion measures of innovation could be instrumental for regional growth policy. *Fourth*, a variety of policy approaches in different regions is necessary precondition for benchmarking and comparison.

In principle, there are two approaches to the regionalization of innovation policy. One strategy is to concentrate directly on amending regional innovation systems by instruments that are particularly targeted at improving innovation conditions in certain regions. A second strategy, possibly complementary to the first one, is to adapt national innovation policies in such a way that they account for region specific aspects. (Regional Innovation Policy 2005, p. 495)

Howells (2005, pp. 1225-1226) discusses innovation policy related to regionality from the two main perspectives: top-down and bottom-up. From top-down perspective, innovation policies link directly with national interests and by its nature adopts more macro, inter-regional perspective. Innovation policy overall is driven by national interests and priorities, even the regional innovation policy. In the bottom-up perspective governments, authorities and agencies have to develop their own distinctive policies in regional level, but also seek to compete for receive, absorb and integrate funds and programs developed at national or pan-national, such as EU level. Lagendijik and Confrond (2000, p, 212) has claimed that in regional innovation policies, there has been a shift from top-down all to more to bottom-up perspective. Howells (2005, p. 1227), however, argues that whether there is evidence of this being translated into innovation

policy, which still remains top-down in most national economies, remains questionable. According to him, regional innovation policy mainly seems to be caught inconveniently between these two perspectives.

There are two important reasons why innovation policy is so important to regions, but also why the regional dimension is important to national level of innovation policy. The first one relates to the link between innovation, growth and economic performance. The second is associated with the fact that wide discrepancies remain in innovation activity in innovation activity between regions. (Howells 2005, p. 1221) Fritsch et al. (2004, p. 289) claim that regionalized innovation policy can be more appropriate and thus more effective than a strategy operated entirely on national level. It can be helpful to involve regional actors in implementing the measures and to shift some of the competences to the regional level. This does not mean that the national level is not important for policy making, but rather that rightly conceived, a national and a regionalized innovation policy are not competing strategies, but mainly complementary.

4.4 Regional Innovation Policy in Europe

Science, technology and innovations have a remarkable role in the economies of industrialized countries, such as most of the European countries, and are an important factor when it comes to their international competition and vitality (Kuhlmann & Edler 2003, p. 619). Innovation policy arose during the 1980's in Westerns Europe, mainly at national an EU level, in order to fortify the innovation capability and competitiveness of European industry facing increased international competition (Isaksen 2003, p. 50).

In Europe, innovation and technology policies are no longer under the sway of national authorities, but competing with regional innovation policies in addition to transnational programs and activities of EU. (Kuhlmann & Edler 2003, p. 620) It can be alleged that in Europe, policies directed on coping with rapid change are to a high degree national and regional, while all the policies affecting the pressure for change, such as competition policy, have increasingly become the responsibility of the European authorities (Lundvall & Borrás 1999, p. 145).

Comparative analysis of various European regions has illustrated that in practice innovation policy is often far from reaching the principles and objects it is it has been directed at. It was found that many regional policy makers have limited capabilities in designing valid innovation strategies. Regional innovation policies were found to be characterized by a firm-centered perspective and an intense focus on the technological strains of innovation alone. In addition, deprivation of a clear vision, innovation strategy and barriers for good coordination between regional and national public authorities have been noticed. (Tödtling & Trippl 2005, p. 1212)

5 SMALL AND MEDIUM-SIZED ENTERPRISES IN EUROPE

5.1 Definitions and Features

Smaller enterprises are more than smaller versions of major corporations. Not only they lack the financial and human capital rife in large businesses, their governance and reward structure are often totally different. (Hausman 2005, p. 774) Enterprises classified small and medium-sized are officially defined by the EU as having less than 250 employees. In addition, the annual turnover of them can not be more than 50 million euro or a balance sheet total more than 43 million euro. (European Commission 2006) Detailed classification, valid from January 2005, is presented in table 3.

Table 3. Classification of SMEs by EU (Commission of the European Communities 2005)

Enterprise category	**Headcount** (unchanged)	**Turnover**	**Total balance sheet**
Medium-sized	< 250	< € 50 million	< € 43 million
Small	<50	< € 10 million	< € 10 million
Micro	<10	< € 2 million	< € 2 million

Bannock (1981) gave a general definition of an SME: *"A small firm is one that has only a small share of its market is managed in a personalized way by its owner or part-owner and through the medium of an elaborate management structure. It is, therefore, not sufficiently large to have access to capital market for the public issue or placement of securities. A branch of a large company can not be regarded as a small firm because, although it is small and may even be independent with regard to decision-making, it will still have access to capital and technical assistance from the parent company."* (Analoui & Karami 2003, p. 25)

SMEs play a focal role in the European economy as they are a major source of entrepreneurial skills, innovation and employment. In the EU countries there are some 23

million SMEs which provide around 75 million jobs and represent as much as 99% of all enterprises. (European commission 2005, p. 5) In Europe, SMEs provide in many fields the channels along which new technologies develop and in such sectors as biotechnology and information technology, a small group of SMEs are even key suppliers of these new technologies (European Commission 2000, p. 3).

As term SME includes firms employing between 1 and 249 people it must be taken into account that there is a considerable variation between the enterprises under this concept. However, some size-related characteristics, encompassing the whole range of SMEs, can be identified (Smallbone et al. 2003, pp. 11-12):

1. A limited resource base, in particular with respect to finance and management compared with larger firms, due to the more limited scope for managerial division of labor.
2. A distinctive organizational culture that arises from the combination of ownership and management which impresses the role of owner-manager and his family.
3. Less ability to fashion and influence the external environment than in the case of larger companies, such as relationships with customers, suppliers, sources of finance and labor markets.

Another approach, based on qualitative elements as well, includes three characteristics. First of these concerns management, which is independent and managers are usually also the owners. Secondly, capital is supplied and ownership is held by an individual or small group. Thirdly, area of operations is mostly local. Workers and owners are in one home community, but markets need not to be located in the same community. (Analoui & Karami 2003, p. 25)

On average, small firms have traditionally had a benefit of being able to change production quickly compared with larger firms. There has been an enlarged importance to provide more differentiated products for consumers as traditional markets have became saturated. Furthermore, SMEs have also better possibilities to offer a specialized personal service, thus advancing differentiated business activity. (Floyd & McManus 2005, p. 145

5.2 Innovation Activities

In the past decade, the role of firm size in innovation processes and productivity has divided scholars between those who argue that small entrepreneurial companies are the primary quarter though which new ideas are introduced, and those who state that only large companies have at their disposal the resources necessary to face large research efforts. Although in many cases the hypothesis of a positive relationship between size and innovation has been verified, the results have shown that this relationship appears weak when innovation is measured exclusively by means of R&D indicators. SMEs do not usually have formal R&D units and therefore statistics based on these indicators underestimate the innovation activity in smaller firms. (Calabrese 2002, p. 217)

Smaller firms tend quite often to be younger firms that are more willing to take risks and become more innovative than their larger counterparts. SMEs have also tension to employ younger persons who may be more efficient and willing to learn new skills which heightens innovativeness. (Floyd & McManus 2005, p. 145)

Even more than in large firms, opportunities for small firms to innovate are firmly influenced by the system of innovation and environment in which they are embedded. Smaller firms also make less frequent use of outside sources of knowledge when it comes to innovations, reflecting the limited capacity to adopt outside knowledge. (Tidd et al. 2001, p. 105) Internal factors have a central role when it comes to the nature and extent of innovative activity in SMEs. These internal factors comprises both personal characteristics of SME owners and managers, for example their background in terms of education and previous experience, and firm characteristics including both resource and organizational issues, together with the integration of these two. Both are prospectively important to the actual way of SMEs innovativeness, especially through their influence on learning capacity of a firm. (Smallbone et al. 2003, p. 15)

It is noticeable that the opportunities for innovations in small firms are strongly influenced by the innovativeness of their possible suppliers. In addition, small firms in some important sectors, such as machinery, are also strongly influenced by the innovativeness of their customers. In both cases personal contacts with suppliers and

customers and their close geographical proximity to the small firm reinforce the effectiveness of innovation. Same kinds of furthering effect have the quality and skills of the local labor. As a consequence, it can be argued that the innovativeness of a small-scale firm is strongly conditioned by the national and regional context in which it is operating. (Tidd et al. 2001, pp. 105-106)

Keizer et al. (2002, p. 14) models the innovation efforts of SMEs through an input-output-scheme presented in figure 7. Their model includes the external factors in the input-part, internal factors in the throughput-section and finally innovation performance in output.

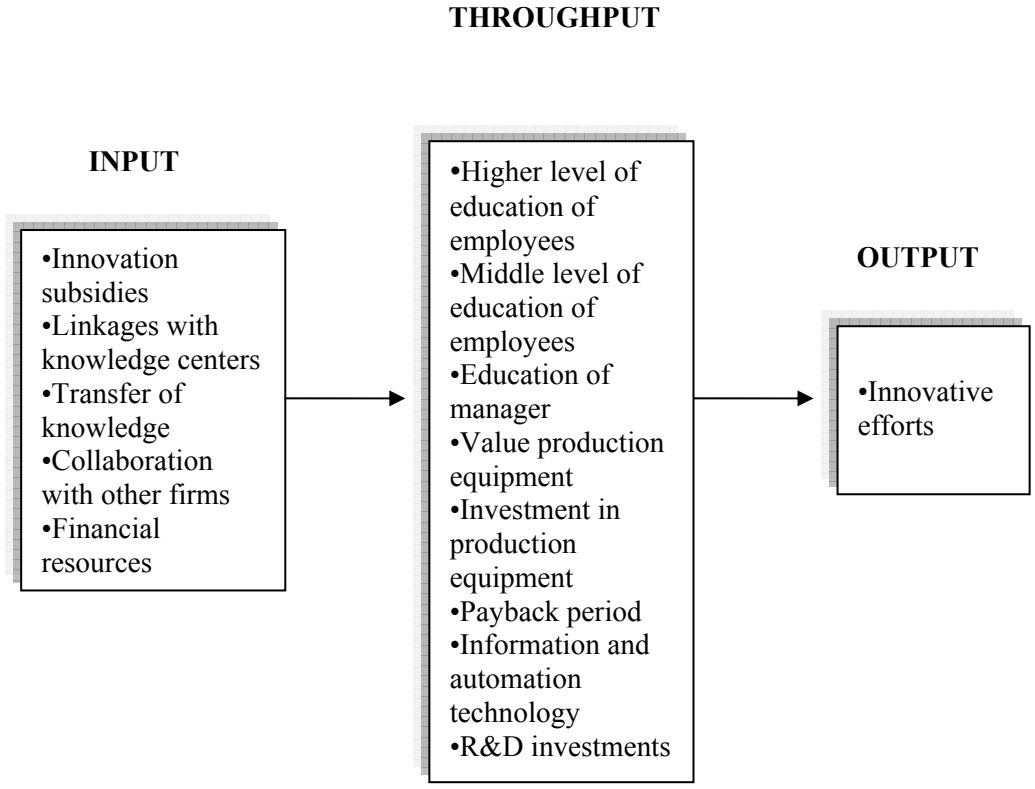

Figure 7. Model of factors influencing innovative efforts of SMEs (Keizer et al. 2002, p. 4)

Hadjimanolis (2000, p. 268) represents strands affecting to innovativeness of smaller companies partially similarly as Keizer et al (2002). His model (figure 8) is, however, divided in four parts of factors and strongly biased towards internal matters.

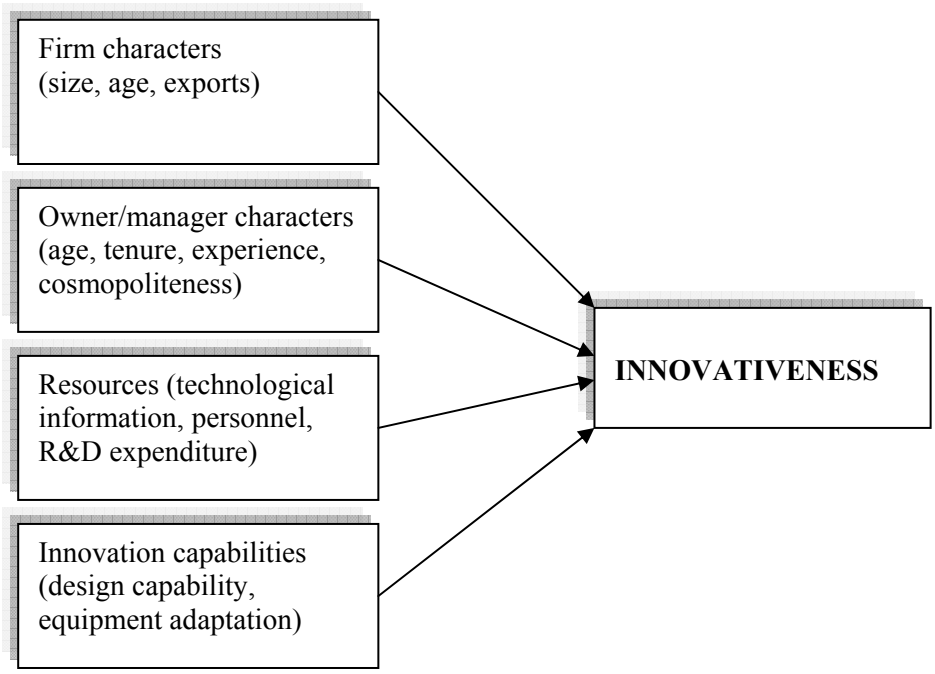

Figure 8. Model of innovativeness predictors in smaller firms (Hadjimanolis 2000, p. 268)

SMEs are often confronted with market imperfections. They have commonly difficulties in procuring capital or credit, particularly in the early stages of the businesses. These restricted resources may also reduce access to innovation or new technologies. (European commission 2005, p. 5) At present, however, it is paid heed to small firms having an important role in the production of innovation. This is not only considered decisive to the growth of output, productivity and employment, but also a crucial driving force behind rising living standards. (Sheikh & Oberholzner 2001, p. 1)

5.3 Innovation Policy from SMEs' Perspective

Encouraging innovation in SMEs remains at the heart of policy initiatives for invigorating economic development both in regional, national and European level (Edwards et al. 2005, p. 1119). However, it is considerable to stress that the heterogeneity existing within the SMEs means that there is no single model or set of factors explaining the elements of innovativeness (Smallbone et al. 2003, p. 15) and therefore no single way of supporting these activities. In addition, it must be recognized, that it is neither realistic nor desirable to support all the needs of SMEs, as well as firms in general, through public

policy. In this respect, the aim should be to focus those public resources available on the needs of economy at the regional level, rather than simply on the expressed needs of individual SMEs themselves. (North et al. 2001, p. 305)

The focus on SMEs and the regional level is a consequence of changes in the approach to innovation policy since the 1980's. One characteristic feature is a more significant emphasis on stimulating innovation activity in SMEs and comparatively less focus on the national high-fliers. The significance of the regional level for the innovation activity of SMEs varies among others depending on the different types of SMEs. (Asheim & Isaksen 2003, pp. 21-22)

By no manner of means all SMEs are rooted in a local innovative milieu but rather participate in different kinds of production and innovation systems: both regional, national and supra-national. The position and role of enterprises within such systems affects the way of their innovation activities as well as their needs for the supportive services, e.g. policies. Table 4 distinguishes three main types on SMEs. (Asheim & Isaksen 2003, p. 22) According to this approach, it is notable that the regional level of innovation activities is significant only for those firms which have a bond with the region through operational level. Locating in a region does not intrinsically tie the firm into the regional system and influence of regional policies.

Table 4. Characteristics of innovation for different types of SMEs (Asheim & Isaksen 2003, p. 23)

Type of SME	Example	Important source of innovation	Type of innovation system
Firms in local production systems	Industrial districts or other regional clusters	Local collective knowledge and local actors	Regional, territorially embedded
Final market producing firms outside local production system	Isolated firms with little or no local collaboration	The R&D-sector for research-intensive SMEs; Suppliers for less technologically advanced SMEs	National or international
Subcontractors for firms outside the region or for local firms	Specialization subcontractors in local innovative milieus; Capacity subcontractors in 'low-cost' areas	Local competence actors; Customers	All geographical levels

Beneficial progress in the activities of SMEs necessitates their constant ability to observe the changes in demand and operational environment, as well as ability to regenerate products, technologies and operations models. Thus, innovation policy should lead up to connecting the SMEs more closely to innovation networks in the heart of economy, especially in the regional context. (Ruuskanen 2004, pp. 45-46) Nauwelaers and Wintjes (2002, p. 206) claim that the main role for innovation policy, in order to increase the capacity of a region and capabilities of its SMEs to innovate, is to foster interactive learning within the firms and the region.

6 INTRODUCTION TO SME SURVEY

6.1 Regions Involved

The MERIPA partner regions are diversified in several ways, demonstrating the variety of concept of region in Europe and diversity on which European Union is built. The regions of MERIPA do not necessarily form a representative cross section of regions in EU, but there is a great variance in population, geographic size, economic structure, wealth, history, language and culture. Some numerical facts of the regions are presented in table 5. Furthermore, they represent regions of different histories within EU: New Member States, those that joined during the previous enlargement in 1995 and those that became members earlier. (MERIPA b 2006, p. 4) Following descriptions of regions in general are presented in order to offer background information to consider the results of the study.

Table 5. Facts about the regions of MERIPA (MERIPA b 2006, p. 4)

Region	Population	Size (km2)	GDP/capita (€)
Blekinge	150 335	2 941	24 398
Emilia-Romagna	4 059 416	22 123	28 000
Kouvola	98 000	3 570	21 500
North Jutland	498 000	6 173	29 333
Vilnius	894 000	9 650	7 594

6.1.1 Blekinge

Blekinge is a small county in the coast of Southern Sweden and part of larger South Sweden Region, Samverkan I Sydsverige. The main cities of Blekinge are Karlskrona, Solvesborg, Olofström, Ronneby and Karlshamn. Development in the countries on the other side of the Baltic Sea has given the harbors of Blekinge a position as a natural gateway to the new Europe. Blekinge is a central part of enlarging Baltic region. (MERIPA c 2006, p. 4)

The regional co-operation council, Region Blekinge, was established in 2001. Region Blekinge has an assembly, a board and committees for the five priority fields. These fields are cultural affairs, Baltic and other European matters, infrastructure and public transport, education and R&D, and tourism. On other matters, the decisions are made at the municipal level. (MERIPA c 2006, p. 4)

Industrialization started slowly in the region. Yet, by the 1960's, industrial growth of Blekinge was in full swing as the local industries expanded. In the mid 1970's Blekinge had become a totally industrialized county. The largest corporation of the region is Volvo Cars Body Components in Olofström. Blekinge is now leading with the ICT sector, with numerous ICT companies located in the region. Smaller enterprises are growing in number as well as in strength. A vital part of the development is the Blekinge Institute of Technology (BIT), focused on ICT in the areas of education and research. The most important companies of ICT sector in the region are linked with BIT. However, the main economic sector in the region still is manufacturing. (MERIPA c 2006, p. 4)

6.1.2 Emilia-Romagna

The Emilia-Romagna Region is situated in the North-East of Italy and one of the largest Italian regions. The region consists of 341 municipalities, 165 of which have less than 5 000 inhabitants. The main cities of Emilia-Romagna are Bologna, Modena, Parma and Rimini. (MERIPA c 2006, p. 5)

Economic and structural indicators place the region among the most developed regions in Italy. Aggregate consumption, GDP, investment and net exports are larger than the national average. Most developed industrial sectors are research and informatics, manufacturing and commerce with 2/3 of local productive units and 60 % of workers employed by them. Companies of the region are mainly SMEs. Tourism and the agriculture and food sector are considered especially significant for the future economic growth. (MERIPA c 2006, p. 5)

Strong integration between the agriculture and food sector as well as the existing industrial and commercial activities create a complex local productive system with several industrial districts and technological clusters. The research centers and universities (five in the regional territory of Emilia-Romagna) interact strongly with the regional productive structure through several projects and initiatives of governmental agencies. Innovations have as strong role in the region. (MERIPA c 2006, p. 5)

6.1.3 Kouvola

The Kouvola Region is formed by seven municipalities: Kouvola, Kuusankoski, Anjalankoski, Valkeala, Iitti, Elimäki and Jaala. The region is headed by the Council of the Kouvola Region Federation of Municipalities, a cooperation organization that carries out specific tasks in the region. The regional structure in Finland is rather complex compared to other countries of Europe. There is no regional administration as such, and the different divisions into regions do not always follow a simple logic. Kouvola Region is a part of Province of South Finland, forms Kymenlaakso Region together with Kotka-Hamina Region in south and the Region of Southeast Finland together with South Karelia Region in east. In the domestic scheme, the region of Southeast Finland is the operative unit to which Kouvola Region belongs. (MERIPA c 2006, pp. 5-6)

In the terms of economy, Kouvola Region is at the heart of the Finnish forest industry. In the region there are some six times as many industrial jobs than in average in Finland, 40 % of which are in paper industry. The largest sector of employment, however, is the public sector. Other economic sectors are retail and service industry, transport and agriculture. (MERIPA c 2006, p. 6)

Kouvola Region does not have a research university of its own. The Department of Translation of the University of Helsinki is nonetheless located in Kouvola as well as a research unit of the Lappeenranta University of Technology (LUT). The departments of Communication, Design, Business Administration and Health care of the Kymenlaakso University of Applied Sciences are also situated in region. The Kouvola Region Expertise Centre is an important innovation and development actor in the region. (MERIPA c 2006, p. 6)

6.1.4 North Jutland

The Region North Jutland is formed by 27 municipalities of which the largest and also the capital of the region is Aalborg. The County of North Jutland has overall political responsibility for regional development in North Jutland and is one of the leading partners in promotion of innovation development in the region. (MERIPA c 2006, p. 8)

The business structure is considerable influenced by many small enterprises. The most dominating areas are foodstuffs, iron and steel, tourism and the service sector. The largest sector is the iron and steel sector covering a very wide area from building wind turbines to industries within mobile communication. About a third of the jobs in North Jutland are in the foodstuff where there is a strong secondary - and processing industry in connection within the agriculture and fishing industries. And the third largest sector is the tourism and service sector covering trade, hotel and catering. (MERIPA c 2006, p. 7)

Innovation and the implementation of new technology have been features in the development policy of the region for the last 10 years. Industrial policy has become more integrated with labor market policy and educational and training policy. There has been a positive economic development in the region in the last year and a half. From having an employment rate on 10% it is now lowered to a little less than 8%. (MERIPA c 2006, p. 7)

6.1.5 Vilnius

The Vilnius County is the largest county in the Lithuania in terms of population and area. The county occupies Eastern part of Lithuania and accounts for 15 % of industrial output of the whole country. In terms of economic performance, Vilnius Region is the most developed region in Lithuania. In 2004 GDP in Vilnius was 44 % higher than national average. (MERIPA c 2006, p. 8)

The main industries are chemistry and pharmaceutics, biotechnology, laser technology, information technology and telecommunications, electronics and precision mechanics, furniture, paper, food and light industry. The City of Vilnius is the capital of Lithuania,

and the administrative center of the region. Most of the hi-tech companies, as well as logistics, financial and consultancy services are concentrated in the City of Vilnius. Woodworking and food industries dominate in other parts of the Vilnius Region. (MERIPA c 2006, p. 8)

Vilnius is known as the centre of research and education. The city of Vilnius has eight universities and also institutes and academies. Scientific research institutes based in Vilnius work primarily in the areas of information science, mathematics, physics, electronics, chemistry and biochemistry. Vilnius Region has a strong business and academic potential in the areas of biotechnology, laser technology, information technology and telecommunications, electronics and precision mechanics. There are several research and scientific institutions in the region related to these areas. (MERIPA c 2006, p. 8)

6.2 Research Setting

The nature of the study is mainly quantitative. Heikkilä (1998, p. 17) depicts quantitative studies simply with the following characters: Quantitative research method gathers information in numeric form. The object of the quantitative study is to describe and analyze the data. The study mainly deals with quantitative matters, although the collected data also contains qualitative elements. The study encompasses both descriptive part and a part of analysis.

In the field study, no hypotheses were made beforehand, but the questionnaire for SMEs was based on the background theories related to the subject of the survey. After receiving all the responses to the questionnaire, more specific propositions were made. The questions considered most important and illustrative, in addition to some explanatory background factors considering the business environment, were described graphically region by region and then compared between the regions. Statistical analysis, chosen in compliance with the relatively small sample of data, was carried out to explain the companies' experience of and behavior on regional innovation policy and find out possible relation between chosen variables.

6.3 Questionnaire

To gather up data for the study, a questionnaire designed for SMEs (appendix 1) was compiled. The questionnaire was based on the theoretical background presented above. The literature and articles of previous studies on innovation policy, regional innovation policy and SMEs were studied in order to find strands of effective innovation policy, especially in association with SMEs. The questions were formulated as simple as possible, i.e. characteristics related to regional innovation policy were split into small and concrete sub-questions, to ease the respondents to give their contribution to the study. The questionnaire consists of 28 main questions with some sub-questions most of which were quantitative evaluation.

The questionnaire was placed on the web page in six languages. MERIPA partners from each region were asked to contact 200-300 companies in each region in order to ask them to answer the questionnaire. Companies were mainly contacted by e-mail. A web-based questionnaire was chosen so that all the activities related to the interviews could be more easily and effectively controlled. In addition, it was thought that it would be most simple and convenient for the companies to answer the questions and give their contribution to the survey in this format. According to Shermis and Lompard (1999, p. 343-344) Internet offers a possibility for data collection to attain high response rates at lower costs in many kinds of research. They also state that electronic surveys may provide more accurate data in comparison with other methods of survey administration as responses to electronic questionnaires should be minimally affected by the social desirability bias affected with the interview.

In this study, using web-based questionnaire also provided for using both quantitative and qualitative indicators, though, as mentioned above, most of the questions were quantitative. Some of the responses, however, were collected using other methods, such as e-mail or telephone, because of the variable regional conditions. Some companies still seemed to think that filling out an electronic questionnaire is more laborious than a traditional interview.

The SMEs which were asked to respond to the questionnaire were chosen randomly in each region. Mainly, the sources were databases of the companies in each region, provided by different regional quarters. The condition of a minimum of 30 responsive companies per region ($n \geq 30$) was set. This number is generally regarded as the minimum requirement for statistical operstions. As such, the sample is not large enough to make an extensive analysis of innovation policy and impacts on SMEs, but it is sufficient to attain indicative insight into a group of SMEs' views and perspectives on regional innovation policy.

The total sample (N) is 190 and the regional division of observations is following:

- Blekinge Region n = 33
- Emilia-Romagna Region n = 74
- Kouvola Region n = 38
- North Jutland region n = 31
- Vilnius Region n = 15

The number of observations received from Vilnius Region (n=15) was not adequate to perform statistical analyses. In other words, the sample of Vilnius does not appear with statistically relevant correlation. However, the main parts of the data were described graphically, as well as the data of the other four regions, and compared with the other regions. Because of the small sample provided by Vilnius, the results of the region should be treated with certain reservation.

The major reason of such low response rate in Vilnius might be either that managers of enterprises are not interested in innovation policies and thus do not understand the questions of the questionnaire, or they do not experience any effects of innovation policies thus do not know what to answer. Also the reason might be lack of culture of cooperation among entrepreneurs in Vilnius. It has to be taken account that innovations and innovation policy are rather new issues in Lithuania because of the late changeover to market economy system and therefore companies are baffled with them.

Overall, collecting the responses for the questionnaire took quite a while as activating the SMEs to answer was not straightforward. It seemed that SMEs could not comprehend the benefit of giving their contribution to survey, which can be a consequence of the fact that regional innovation policy is rather unfamiliar subject to them, even if it was presented very simply and practically.

7 SMES AND REGIONAL INNOVATION POLICY

7.1 Descriptive Survey

The main purpose of the descriptive part of the study is to give an overview of the SMEs' outlook on the innovation policy of their home region. Description of the responses is carried out graphically region by region and then comparatively between the five regions. Some tabulated figures related to division of the responses are represented in appendix 2.

Respondent companies represented several lines of business, from services to manufacturing industry. The classification of business lines used in the questionnaire was the US SIC classification, which is a general classification in research. Even though the focus of the study is European, this classification was used to make the results universal and more easily comparable. The regional division of main business lines of the respondent companies is presented in table 6. As noticeable in the table, major part of the respondent companies from Blekinge practice in the field of services. More than 80 % of the respondent companies from Emilia-Romagna practice in some branch of manufacturing. In Kouvola Region, the companies which responded to the questionnaire were the most equally fragmented between the business lines. None of the respondent companies represented the branch of mining of the branch of finance, insurance and real estate. Manufacturing and services were clearly the most common business lines among the companies included in the study.

Table 6. Business lines of the respondent companies

Line of business	Blekinge	Emilia-Romagna	Kouvola	North Jutland	Vilnius	Total
Agriculture, forestry and fishing		4	2	1		7
Mining						
Construction		1	5	3	1	10
Manufacturing	11	60	8	13	6	98
Transportation, communications, electric, gas and sanitary services		2	6			8
Wholesale trade	1	1	2		7	11
Retail trade			3		1	4
Finance, insurance and real estate						
Services	21	6	10	12		49
Public administration			2	1		3
Total	33	74	38	31	15	190

7.1.1 Blekinge

In order to obtain background information companies were asked to evaluate certain factors related to operational environment of their home region. The scale was from 1 to 5, where 5 is very good and 1 is very weak. Figure nine represents the average scores of Blekinge Region. As the figure shows the business atmosphere in Blekinge is quite good, with an average score of slightly above 3. Companies consider the availability of premises and plots particularly strong factors. The availability of education and qualified personnel as well as co-operational possibilities between companies are rated as favorable factors too. All the factors evaluated in this context, apart from traffic connections and public business services, seem to be better than average in Blekinge in general.

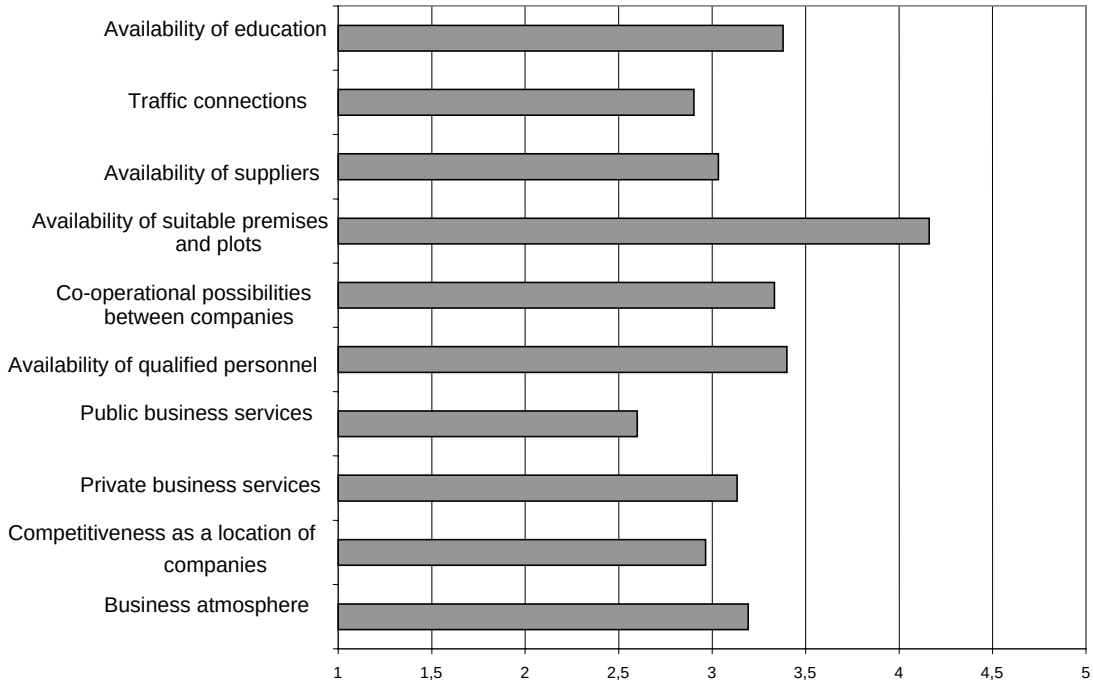

Figure 9. Blekinge - Regional Conditions

To follow on co-operation in the innovation processes of the companies, respondents were asked to evaluate the level of co-operation with given partners. The scale was from 0 to 5 where 0 is no experience, 1 is no co-operation at the moment, and 5 is very high level of co-operation. To get an approximate overview of the situation, the average scores of each partner were calculated. The scores of Blekinge Region are represented in figure 10. As can be seen, with regard to innovation processes, compared with the other partners represented in this case, companies collaborate mainly with other companies in the region and companies outside the region. Companies have the least collaboration with EU programs, and on the whole, the level of collaboration with exterior partners is low.

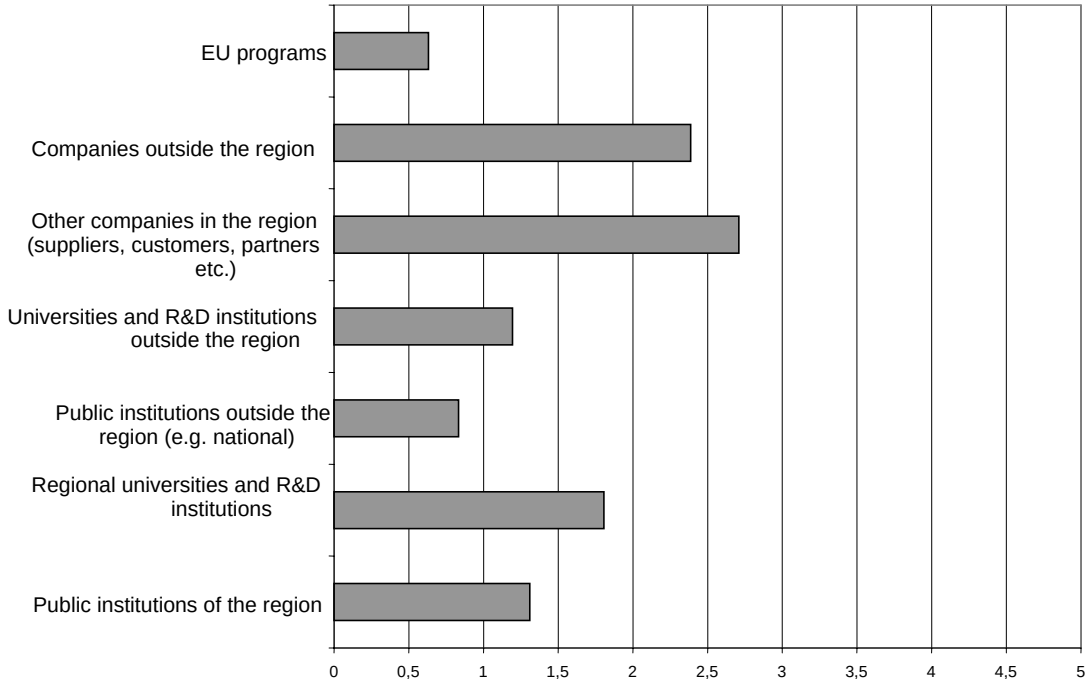

Figure 10. Blekinge - Co-operation in terms of innovation processes

Companies were asked to evaluate the contribution of the public institutions of the region to their innovation development. As can be seen in figure 11, some 30-40 % of the companies in Blekinge considered the contribution of the institutions included in the question at least moderate. Technology transfer centers are the only exception as they seem to have the lowest contribution: only some 10 % of the respondents see the level of contribution as moderate or better and more than 40 % do not have experience of them at all. Support from science parks was reported proportionately the best.

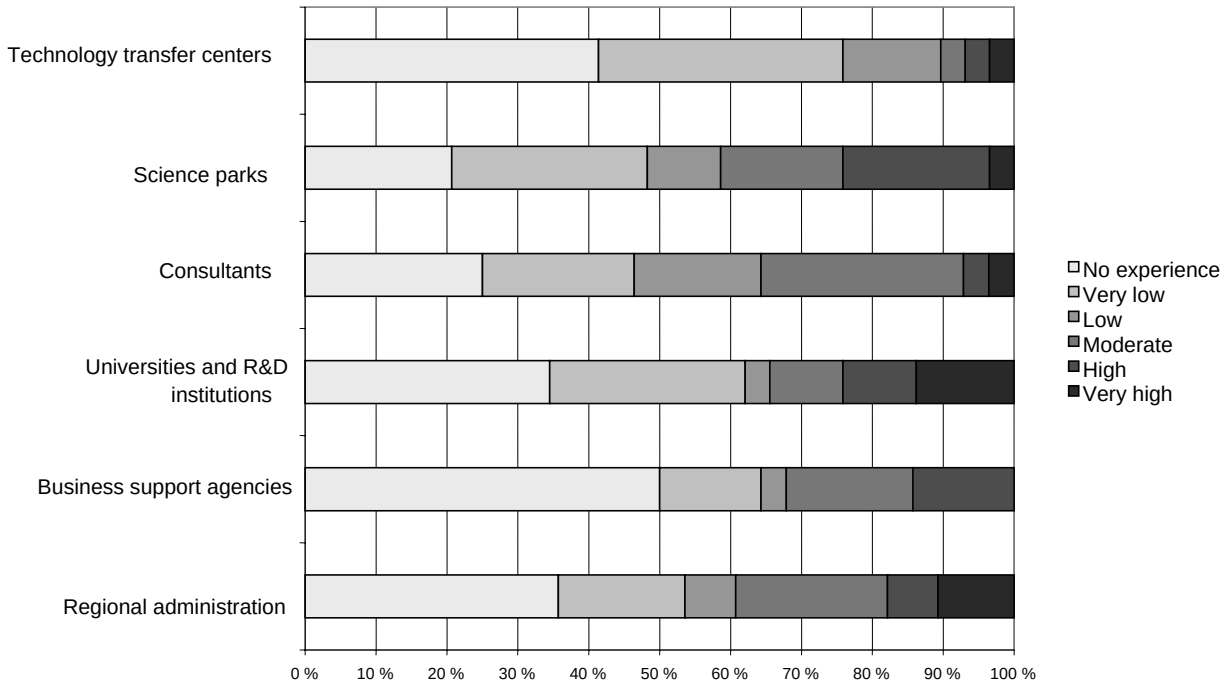

Figure 11. Blekinge - Contribution of public institutions to innovation development in companies

The companies were also asked to evaluate statements about the regional innovation policy of their region. The scale was from 0 to 5 where 0 is no experience, 1 is strongly disagree, and 5 is strongly agree. Statements were formulated based on the features of effective regional innovation policy, with the exception of statements concerning regulation policies and technology-driven nature of innovation policy. Figure in appendix 3 represents the average scores of the results of evaluation in the Blekinge Region. As a whole, the general view on region's innovation policy is not good. All the average scores on statements about the features of good innovation policy are less than three. In other words, companies do not see things working the way they probably should. Comparatively, it seems that support in networking, provided by public institutions, is the most successful area in Blekinge, although, on average, companies slightly disagree with this statement. The respondents most disagree with the statements claiming that public institutions would provide help with market opportunities and that they would finance R&D.

Figure 12 demonstrates the relative importance of actions on regional innovation policies from the companies' point of view. The companies were asked to evaluate the importance of 9 fields of regional innovation policy to their company on a scale from 1 to 5 where 5 is very important and 1 insignificant. As the figure shows, financial support and support on R&D are the most important areas of innovation policy for the companies in Blekinge. The least important is the creation of and support to technology transfer centers, since almost 70 % of the respondents consider this area insignificant or not so significant.

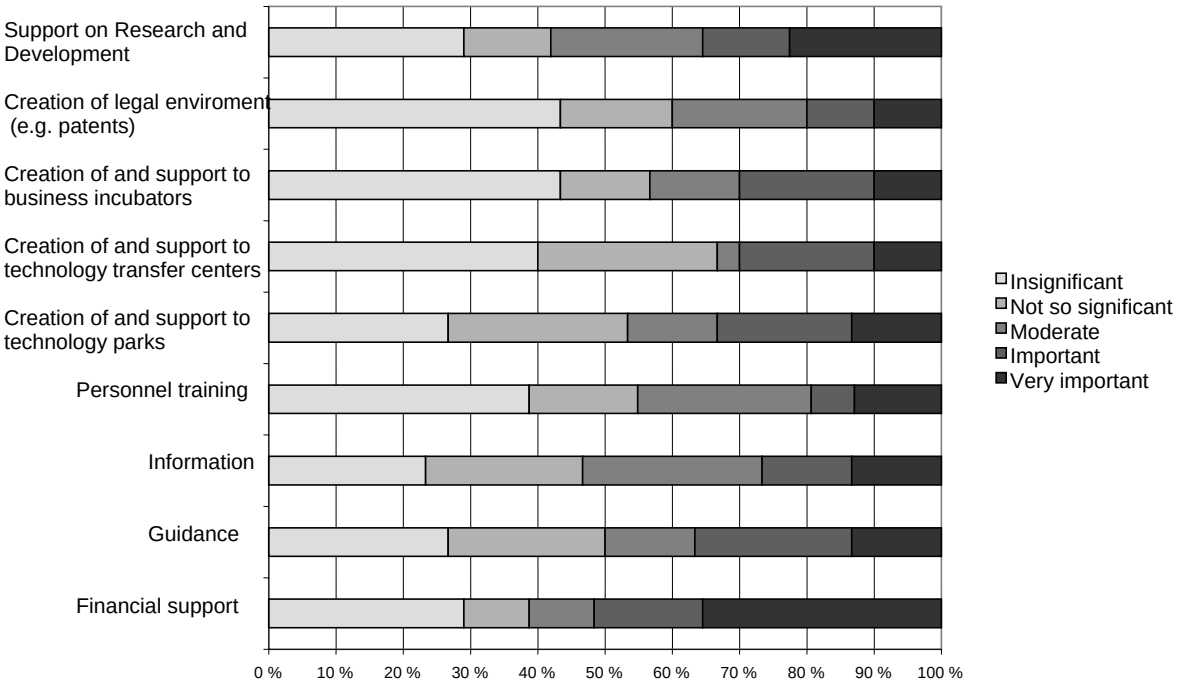

Figure 12. Blekinge - Importance of regional innovation policies

7.1.2 Emilia-Romagna

To gain background information companies were asked to evaluate certain factors related to the operational environment of their home region. The scale was from 1 to 5, where 5 is very good and 1 is very weak. Figure 13 represents the average scores of the Emilia-Romagna Region. As seen in the figure, the business atmosphere in Emilia-Romagna is good, with an average score over 3,5. Companies consider availability of education, general location of the region and availability of qualified personnel as strong factors. All the factors evaluated in this context seemed to be better than moderate in Emilia-

Romagna in general. According to the respondents, the weakest element is availability of premises and plots, however, the average rating of this was above the moderate level.

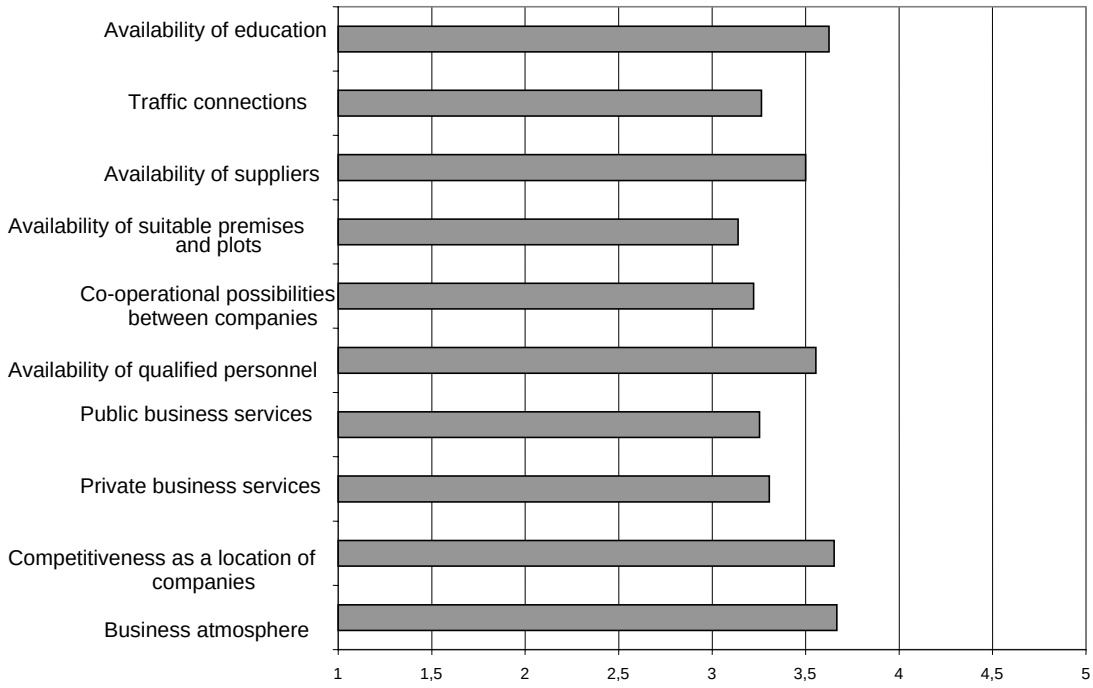

Figure 13. Emilia-Romagna - Regional conditions

To gain an overview on co-operation in the innovation processes of the companies, respondents were asked to evaluate the level of co-operation with given partners. The scale was from 0 to 5 where 0 is no experience, 1 is no co-operation at the moment, and 5 is very high level of co-operation. To get an approximate overview of the situation, average scores of each partner were calculated. The scores of Emilia-Romagna are represented in figure 14. As can be seen, in terms of innovation processes, companies have a remarkably high level of co-operation with regional universities and R&D institutions. Companies have the least collaboration with EU programs and public institutions outside the region. Excluding the collaboration with the regional universities and R&D institutions, the level of co-operation is, on average, rather low.

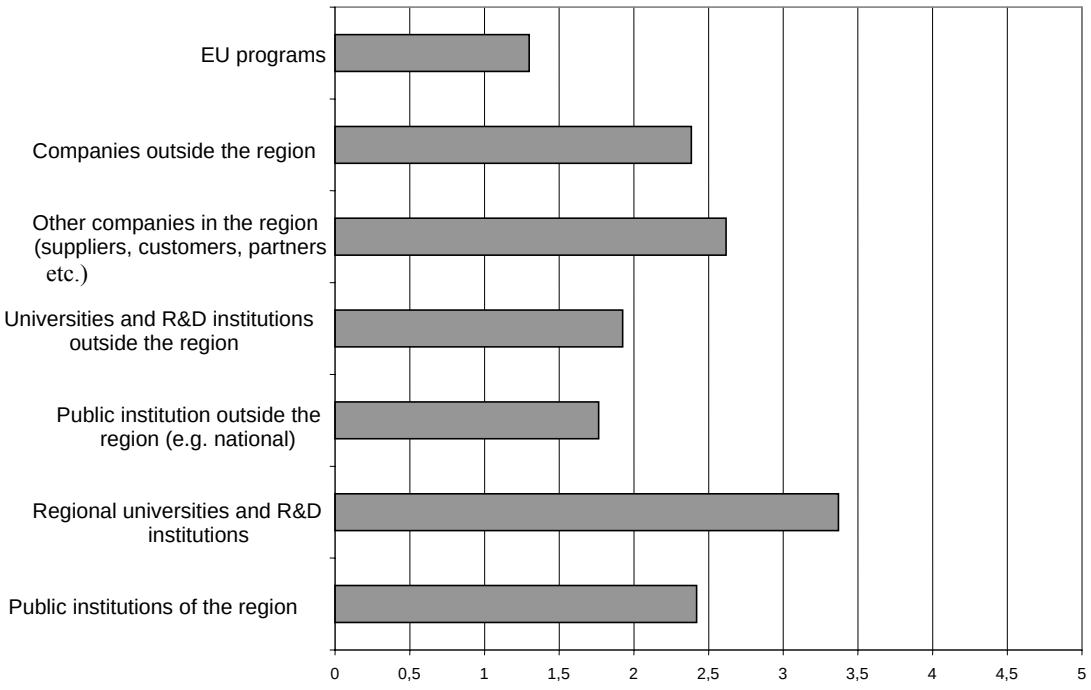

Figure 14. Emilia-Romagna - Co-operation in terms of innovation processes

The companies were also asked to evaluate the contribution of the public institutions of the region to their innovation development. As seen is figure 15, companies in Emilia-Romagna Region perceived the regional administration as having the most significant contribution to their innovation activities. Slightly over 80 % consider its contribution as at least moderate and more than 60 % consider it high or very high. Support from universities and R&D institutions, as well as consultants, is considered favorable. Some 50 % of respondent companies do not have any experience of technology transfer centers, science parks and/or business support agencies in this area.

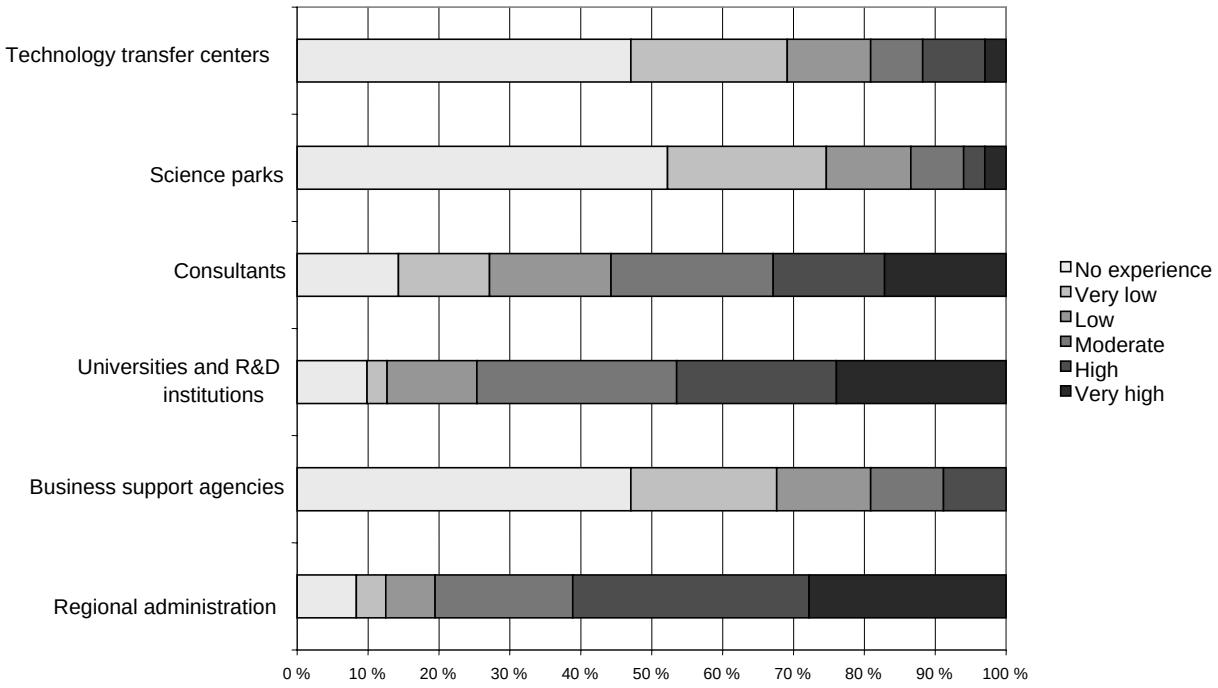

Figure 15. Emilia-Romagna - Contribution of public institutions to innovation development in companies

Companies were asked to evaluate statements about their own region's innovation policy. The scale was from 0 to 5 where 0 is no experience, 1 is strongly disagree, and 5 is strongly agree. Statements were formulated based on the features of effective regional innovation policy, with the exception of statements concerning regulation policies and technology-driven nature of innovation policy. Figure in appendix 4 represents the average scores of the results of evaluation in Emilia-Romagna Region. As seen in the figure, companies think that public institutions of the region give finance to R&D activities and promote an innovation-favorable atmosphere. It seems that the public institutions also support developing human resources to some extent. Respondents quite strongly disagree with the statement on government institutions purchasing innovative products as a means of supporting innovating companies.

Figure 16 demonstrates the relative importance of actions on regional innovation policies. The companies were asked to evaluate the importance of 9 fields of regional innovation policy to their company in a scale from 1 to 5 where 5 is very important and 1 insignificant. As the figure shows, financial support and support for R&D are the most

important areas of innovation policy for the companies in Emilia-Romagna Region. The least important is creation of and support to business incubators, since more than 60 % of the respondents consider this area insignificant or not so significant. Overall, more than half of the companies in Emilia-Romagna think that almost every area of innovation policy has at least moderate importance to their activities.

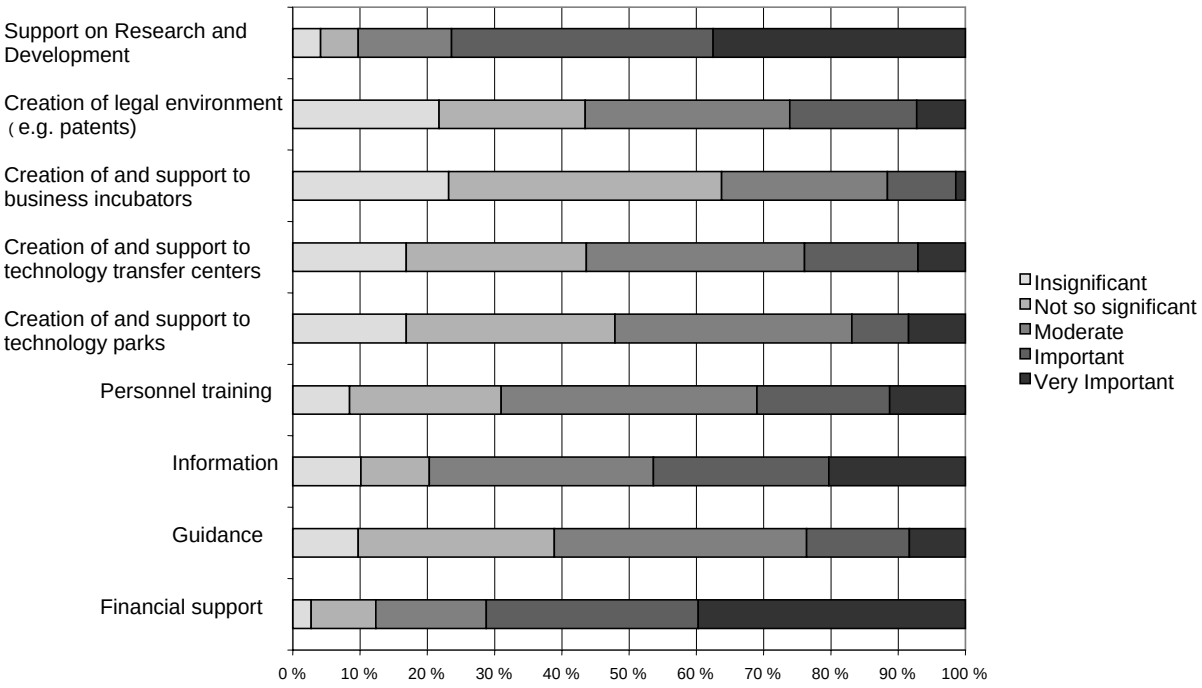

Figure 16. Emilia-Romagna - Importance of regional innovation policies

7.1.3 Kouvola

In order to provide background information we asked companies to evaluate certain factors related to operational environment of their home region. The scale was from 1 to 5, where 5 is very good and 1 is very weak. Figure 17 represents the average scores of the Kouvola Region. It seems that the state of basic conditions, such as traffic conditions and availability of premises and plots, is considered good, as is the availability of suppliers. The availability of qualified personnel is the weakest factor. The business atmosphere in Kouvola Region, according to respondents, is considered rather good, with an average score above 3.

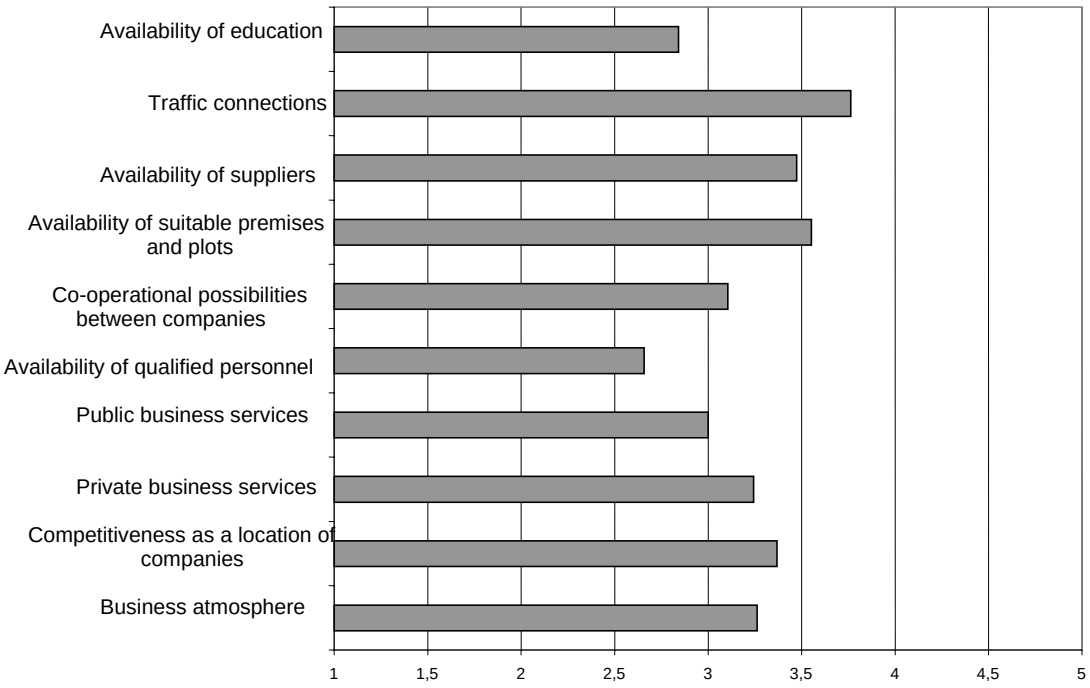

Figure 17. Kouvola – Regional conditions

To follow up on co-operation in the innovation processes of the companies, respondents were asked to evaluate the level of co-operation with given partners. The scale was from 0 to 5 where 0 is no experience, 1 is no co-operation at the moment, and 5 is very high level of co-operation. As mentioned, in order to get an approximate overview of the situation, the average scores of each partner were calculated. These scores are represented in figure 18. As can be seen, in terms of innovation processes and development, companies in Kouvola Region collaborate mostly with other companies, both in the region and outside the region. The least co-operation is with regional universities and R&D institutions and EU programs. As a whole, the level of collaboration with exterior partners is quite low.

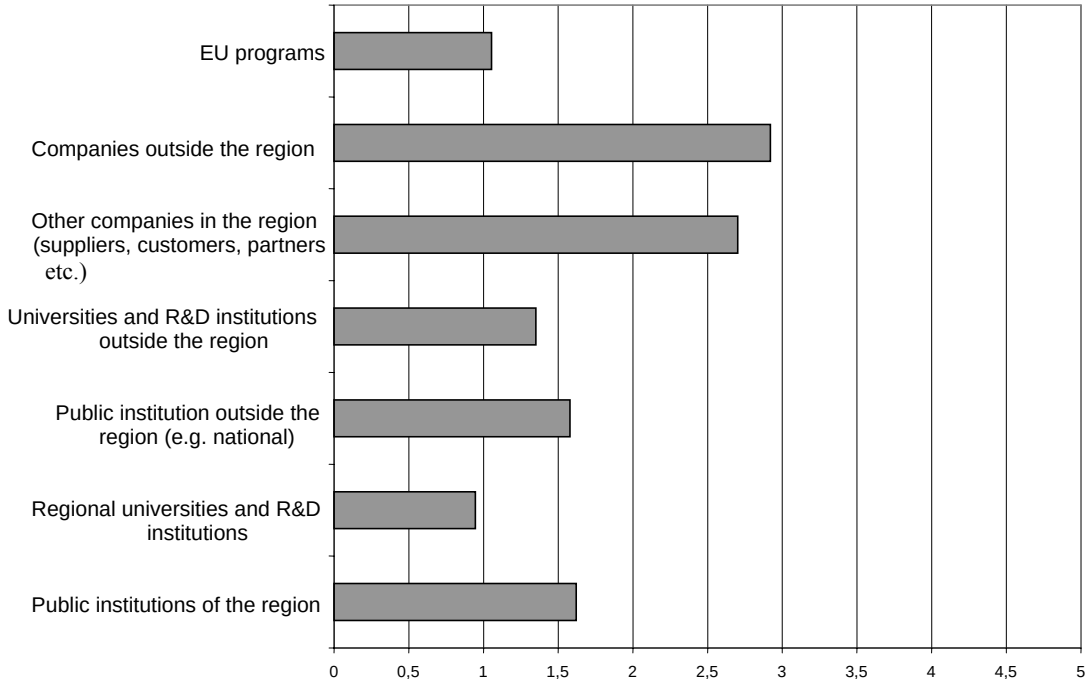

Figure 18. Kouvola – Co-operation in terms of innovation processes

Companies were asked to evaluate the contribution of the public institutions of the region to their innovation development. As figure 19 shows, companies in Kouvola Region do not consider public institutions to have a remarkable contribution in this area. More than 50 % of the companies have no experience or perceive that the level of contribution was very low with every institution included in the survey. The best contribution is from business support agencies, since slightly over 30 % of the companies reported that it is at least moderate.

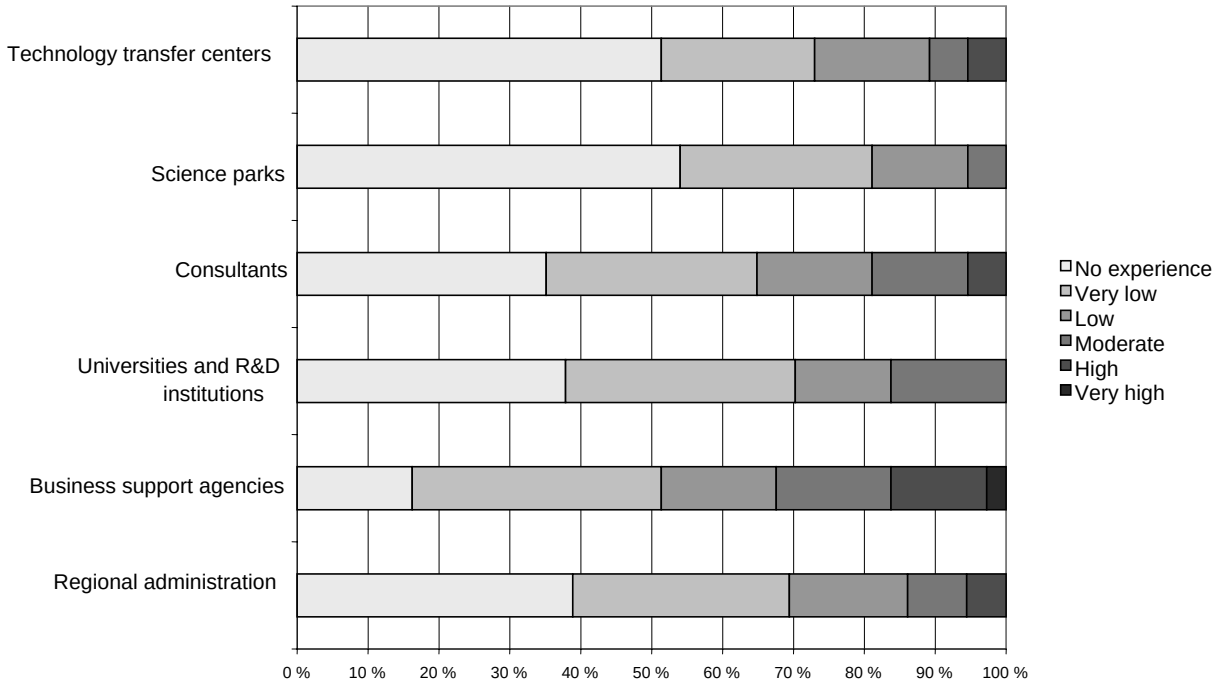

Figure 19. Kouvola – Contribution of public institutions to innovation development in companies

Companies were also asked to evaluate statements on the regional innovation policy of their region. The scale was from 0 to 5 where 0 is no experience, 1 is strongly disagree, and 5 is strongly agree. Statements were formulated based on the features of effective regional innovation policy, with the exception of statements concerning regulation policies and technology-driven nature of innovation policy. Figure in appendix 5 represents the average scores of the results of evaluation in Kouvola Region. As can be seen in the figure, companies consider the innovation policy of the region to be quite technology driven. As a whole, the general view on the regional innovation policy is not so good. All the average scores rating statements on the features of good innovation policy are less than three. In other words, companies do not see things to be working the way they should. Compared to the other fields of activities, it seems that the availability of guidance and political stability are the most successful areas in Kouvola, although, on average, companies slightly disagree with these statements.

Figure 20 demonstrates the relative importance of actions on regional innovation policies. The companies were asked to evaluate the importance of nine fields of regional innovation policy to their company on a scale from 1 to 5 where 5 is very important and 1 is insignificant. As seen in the figure, financial support and support on R&D are the most important areas of innovation policy for companies in Kouvola Region. Technology transfer centers and technology parks are the most irrelevant areas, since more than 50 % of the respondents consider them to be insignificant to the company.

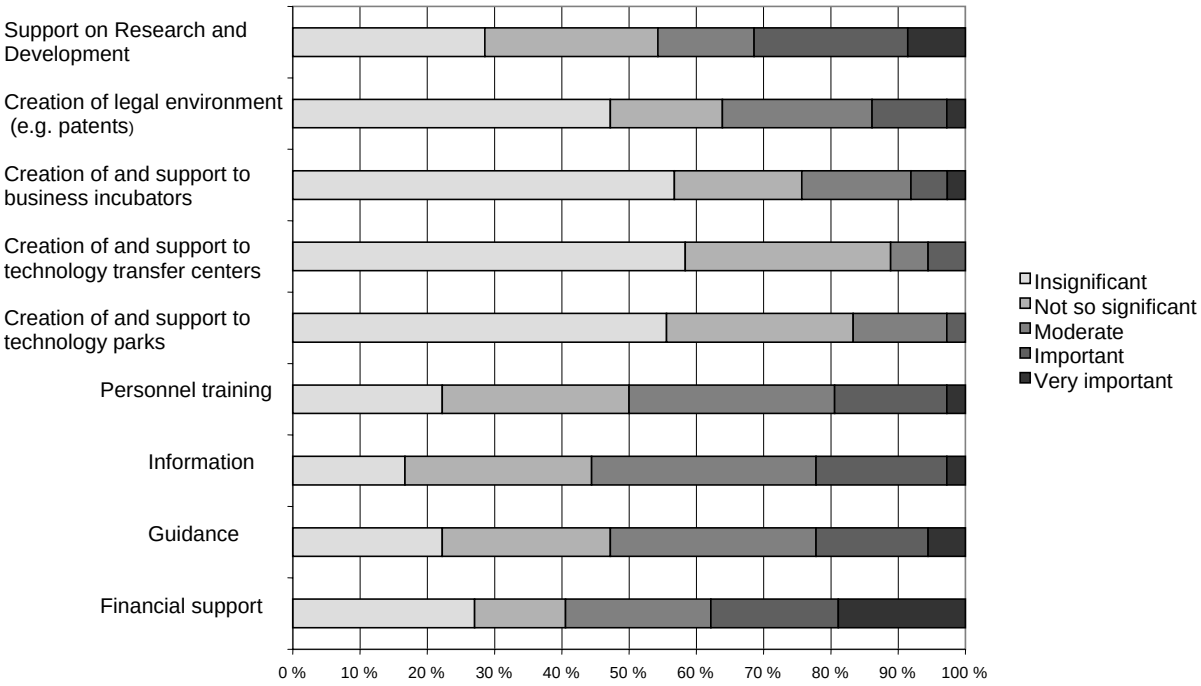

Figure 20. Kouvola – Importance of regional innovation policies

7.1.4 North Jutland

In order to bring out background information companies were asked to evaluate certain factors related to the operational environment of their home region. As mentioned, the scale was from 1 to 5, where 5 is very good and 1 is very weak. Figure 16 represents the average scores North Jutland Region As can be seen in figure 21, the business atmosphere in North Jutland is good, with an average score above 3,5. Companies consider availability of premises and plots and traffic connections to be strong factors. All the factors evaluated in this context seem to be better than moderate in North Jutland

in general, apart from public business services, which is the weakest factor with an average rating of less than 3.

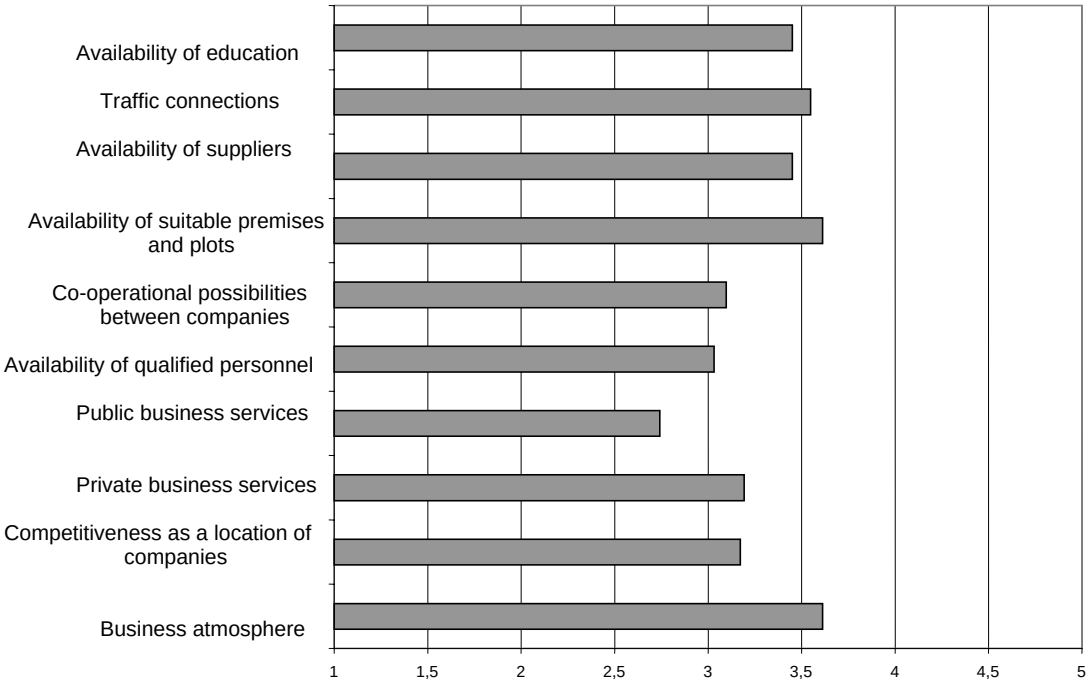

Figure 21. North Jutland – Regional conditions

In order to clarify the extent of co-operation in the innovation processes of the companies, respondents were asked to evaluate the level of co-operation with given partners. The scale was from 0 to 5 where 0 is no experience, 1 is no co-operation at the moment, and 5 is very high level of co-operation. To get an approximate overview of the situation, average scores given to each partner were calculated. The scores of North Jutland are represented in figure 22. As the figure shows, in terms of innovation processes and development, companies in North Jutland collaborate mostly with other companies, especially those in the region. Co-operation is lowest with regional public institutions and EU programs. As a whole, the level of collaboration with partners is quite low.

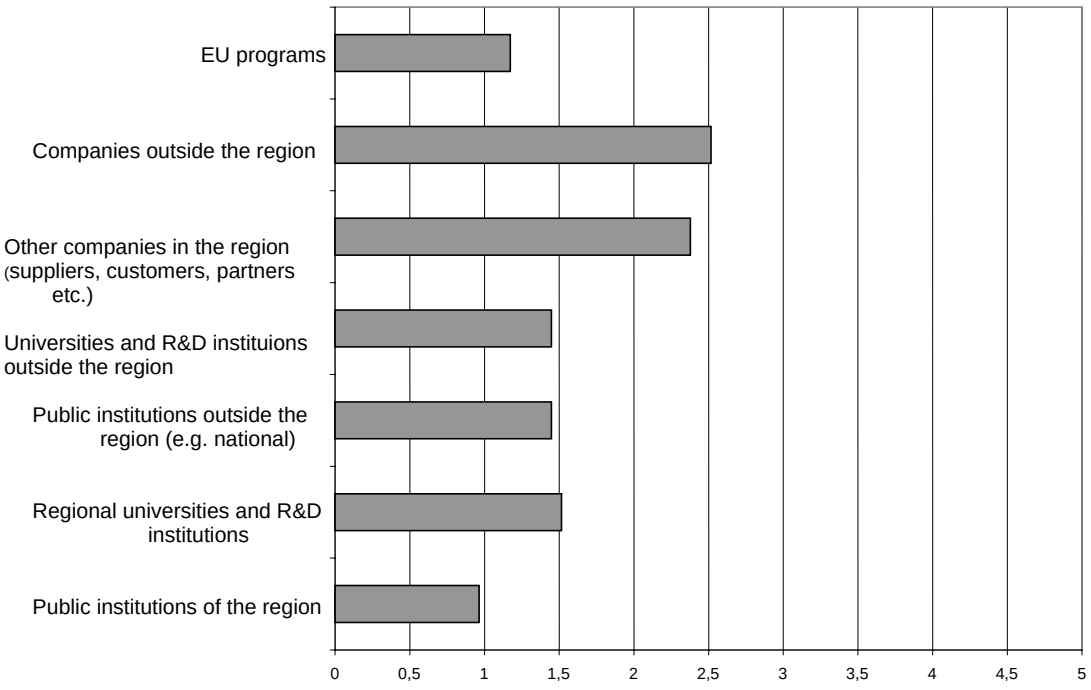

Figure 22. North Jutland – Co-operation in terms of innovation processes

As mentioned, companies were asked to evaluate the contribution of the public institutions of the region to their innovation development. As seen in figure 23, companies in the North Jutland region think that public institutions do not make a remarkable contribution in this area. More than 50 % of the companies have no experience or found the level of contribution to be very low with every institution included in the survey. None of the respondents have very high levels of co-operation with the institutions listed. Business consultants are considered to make the best contributions, since nearly 30 % of the companies reported that it was at least moderate.

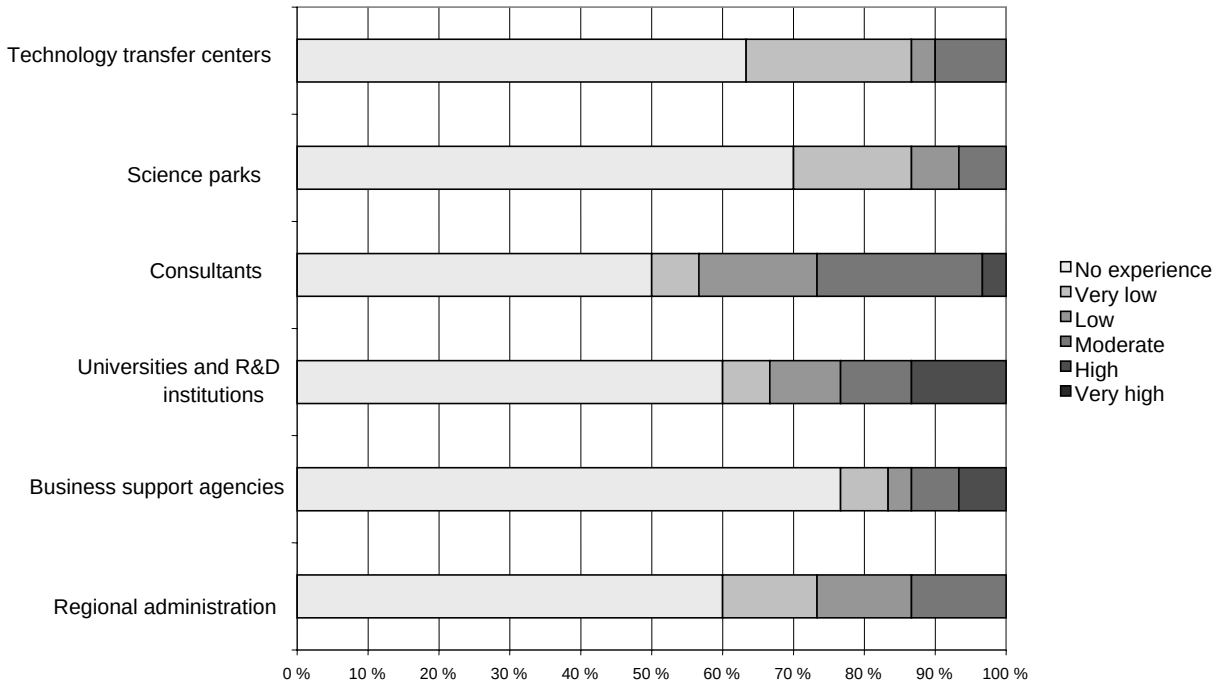

Figure 23. North Jutland - Contribution of public institutions to innovation development in companies

Companies were asked to evaluate statements on their region's innovation policy. The scale was from 0 to 5 where 0 is no experience, 1 is strongly disagree, and 5 is strongly agree. Statements were formulated based on the features of effective regional innovation policy, with the exception of statements concerning regulation policies and technology-driven nature of innovation policy. Figure in appendix 6 represents the average scores of the results of evaluation in North Jutland. As can be seen in the figure, companies seem to think that the innovation policy of the region was quite technology driven. This might be by reason of that the iron and steel sector is the largest sector in the business structure of the region and thus reflect to some degree to definition of the regional policy. As a whole, the general view on the regional innovation policy is not good. All the average scores on statements about the features of good innovation policy are less than three. In other words, companies do not see the policy working the way it should. Compared with other factors, it seems that the political stability, positive impact of educational policies, and help at in the initial stages of new business are the most successful areas in North Jutland, although companies slightly disagree, on average, with these statements.

Figure 24 demonstrates the relative importance of actions on regional innovation policies. The companies were asked to evaluate the importance of 9 fields of regional innovation policy to their company on a scale from 1 to 5 where 5 is very important and 1 insignificant. As the figure demonstrates, financial support and guidance, in such fields as technological know-how, market access, networking etc., are the most important areas of innovation policy for the companies in North Jutland. Just over 70 % of the companies reported that the importance of information provided is at least moderate. The creation of and support to business incubators and technology parks are the most irrelevant areas, since more than 50 % of the respondents consider these to be insignificant to the company.

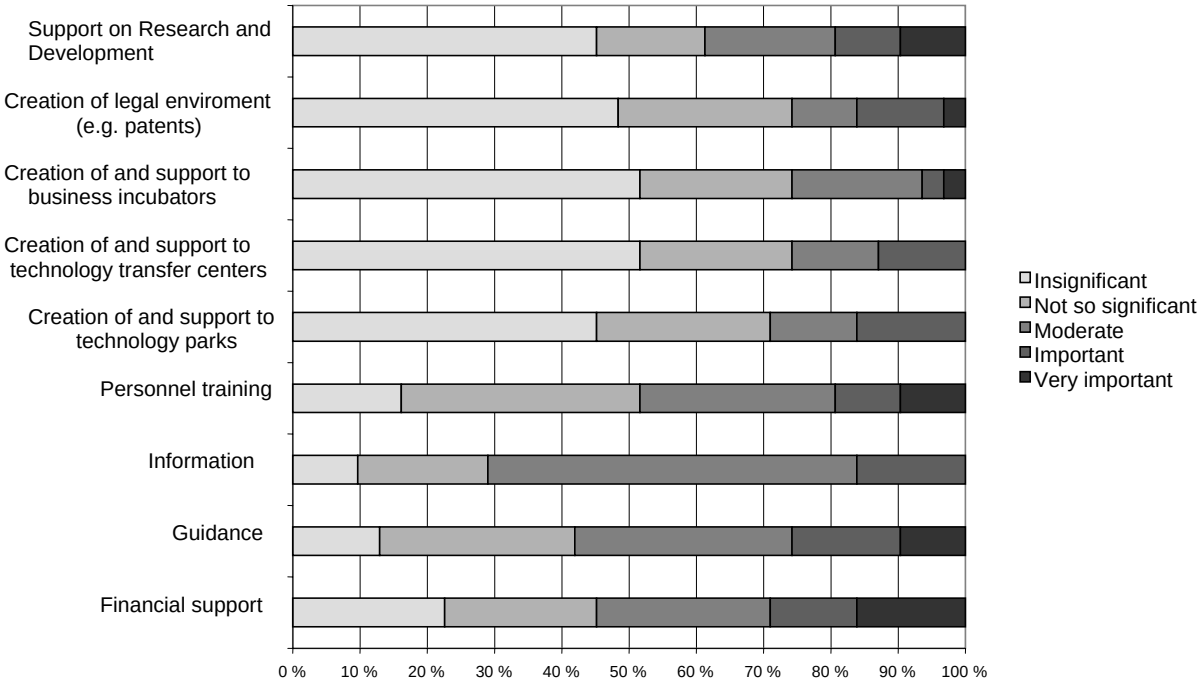

Figure 24. North Jutland – Importance of regional innovation policies

7.1.5 Vilnius

As mentioned, because of the small number of observations of Vilnius Region, the figures presented in this survey must be considered with some reservation. The results below are therefore only observations based on the received responses. In order to obtain background information we asked companies to evaluate certain factors related to the

operational environment of their home region. The scale was from 1 to 5, where 5 is very good and 1 is very weak. Figure 25 represents the average scores of the Vilnius Region. As can be seen in the figure, the business atmosphere in Vilnius is quite good, with an average score above 3. Companies considered the availability of education and plots and suppliers the strongest factors. All the factors evaluated in this context seem to be better than moderate in Vilnius in general, apart from public business services, which is the weakest factor with an average score of less than 3.

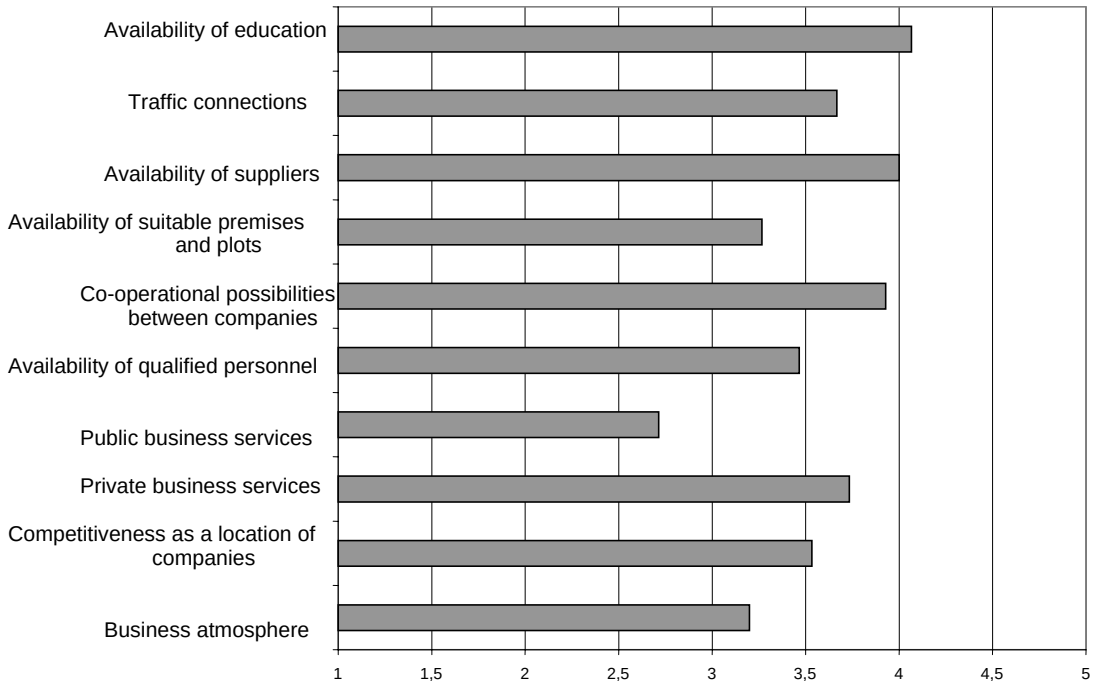

Figure 25. Vilnius – Regional conditions

To clarify the extent of co-operation in the innovation processes of the companies, respondents were asked to evaluate the level of co-operation with given partners. The scale was from 0 to 5 where 0 is no experience, 1 is no co-operation at the moment, and 5 is very high level of co-operation. To get an approximate overview of the situation, average scores given to each partner were calculated. The scores of Vilnius are represented in figure 26. In terms of innovation processes and development, respondent companies collaborate mostly with other companies, both in the region and outside the

region. Co-operation levels are lowest with regional public institutions of the region and EU programs. As a whole, the level of collaboration with partners is quite low.

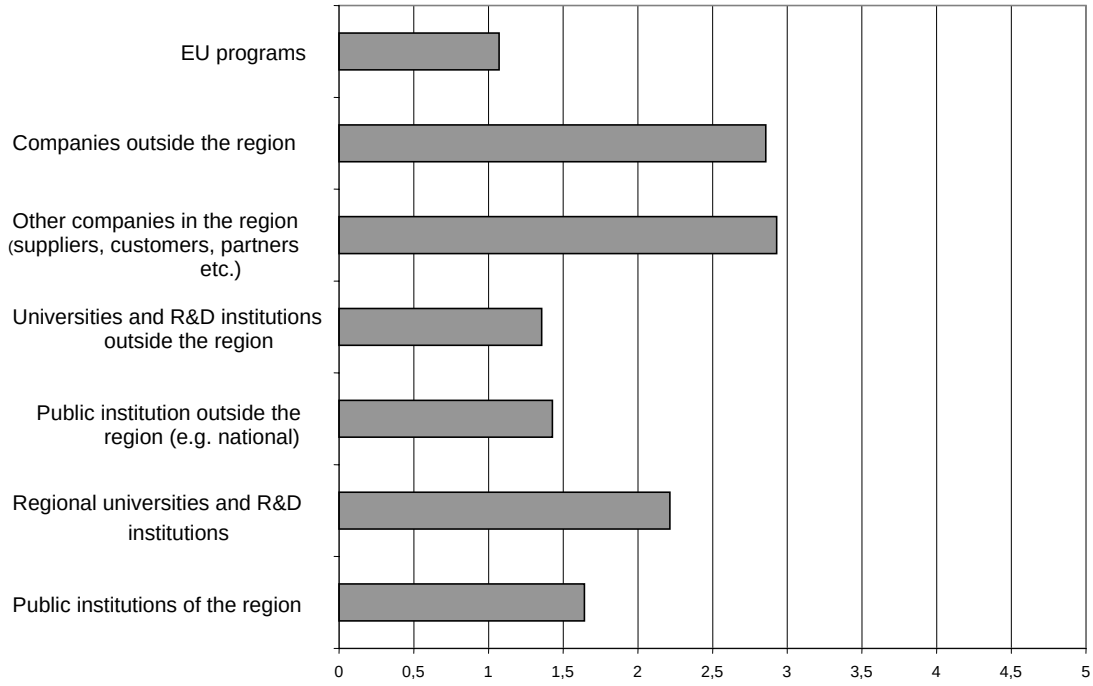

Figure 26. Vilnius – Co-operation in terms of innovation processes

Companies were asked to evaluate the contribution of the public institutions of the region to their innovation development. As seen in figure 27, companies in Vilnius Region do not consider public institutions to have made a remarkable contribution in this area. More than 60 % of the companies do not have experience of institutions included in the survey, excluding consultants, R&D institutions and universities with a corresponding rate of 40 %. None of the respondents have a very high level of co-operation with the institutions listed in the survey. Business consultants are considered to have made the best contribution, since just over 20 % of the companies reported that their contribution was high or very high.

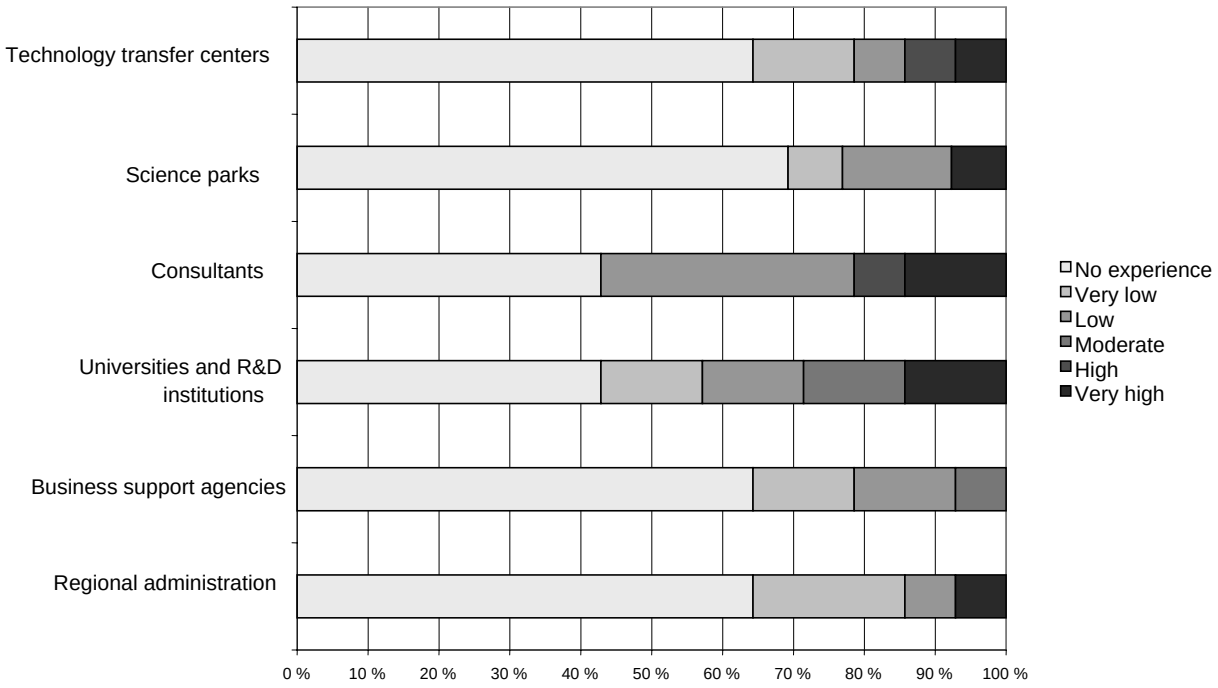

Figure 27. Vilnius - Contribution of public institutions to innovation development in companies

As mentioned above, companies were asked to evaluate statements on their region's innovation policy. The scale was from 0 to 5 where 0 is no experience, 1 is strongly disagree, and 5 is strongly agree. Statements were formulated based on the features of effective regional innovation policy, with the exception of statements concerning regulation policies and the technology-driven nature of innovation policy. Figure in appendix 7 represents the average scores of the results of evaluation in Vilnius. As a whole, the regional innovation policy is not very good. All the average scores on statements of the features of good innovation policy are less than 2,5. In other words, companies do not see the policy working the way it should. The political stability and availability of guidance are the most successful areas in Vilnius, although companies, on average, disagree somewhat with these statements.

Figure 28 demonstrates the relative importance of actions on regional innovation policies. The companies were asked to evaluate the importance of nine fields of regional innovation policy to their company in a scale from 1 to 5 where 5 is very important and 1 insignificant. As seen in the figure, financial support and support on Research and

Development were the most important areas of innovation policy for the respondent companies in Vilnius. Some 70 % of the companies reported that the importance of these actions is important or very important. Creation of and support to business incubators and technology transfer centers are the most irrelevant areas, since slightly over 30 % of the respondents considered these to be insignificant to the company.

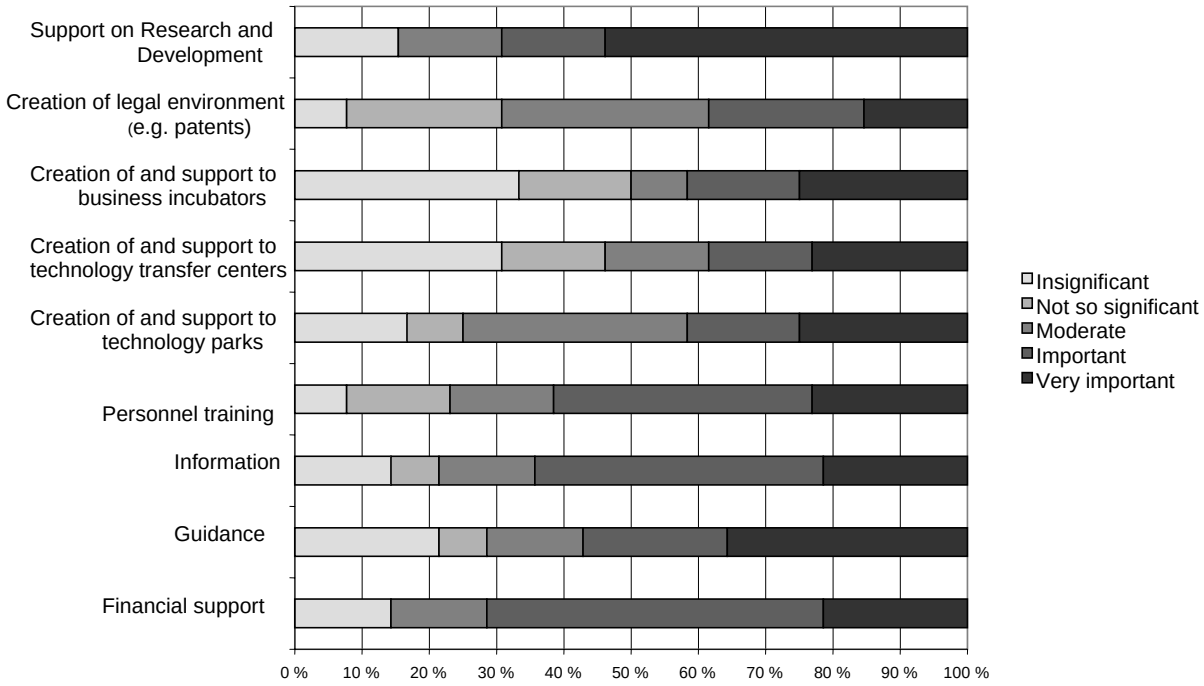

Figure 28. Vilnius – Importance of regional innovation policies

7.1.6 Regional Comparison

To summarize and compare, the average scores of the five questions processed in this survey were aggregated in graphs to represent regional differences and enable comparison. The scales are the same as in the regional graphs. The answers from Vilnius were included, although the number of observations (n=15) was small in contrast to the other four. Nevertheless, it was chosen to consider the total results in order to compare the descriptive results of the five regions and find explanations for the SMEs' experiences of the innovation policy of their home regions.

As figure 29 illustrates, there are no great differences between the regions in the general business environment. The situation in Emilia-Romagna and Vilnius seems to be comparatively better. Emilia-Romagna is a large region with big resources, which is possibly reflected to business environment. It is also imaginable that companies in Emilia-Romagna have a positive attitude when it comes to their home region. This might be the reason for the results of Vilnius, too. Companies in Vilnius have seen the trajectory of their home region's business environment during the past decade and have probably sense of pride towards it.

Many of the regional differences represented in figure 29 could probably be explained by the specifics of each region's conditions. For example, the average scores of availability of qualified personnel and education were quite low in Kouvola, which may be caused by the lack of its own research university and the small size of the units of the universities located in the region. It is important to note that these background factors are, to some extent, embodiments of the actions of regional innovation policy, as well as a reflection of the size and the resources of the region in question. From this point of view, the situation seemed to be reasonable in all the regions. The best general business atmospheres compared to other regions seem to be in Emilia-Romagna and North Jutland. In both the regions, SMEs have a major role in business, which has been taken into account at least to some degree. This might have given the companies a feeling of a pleasant atmosphere.

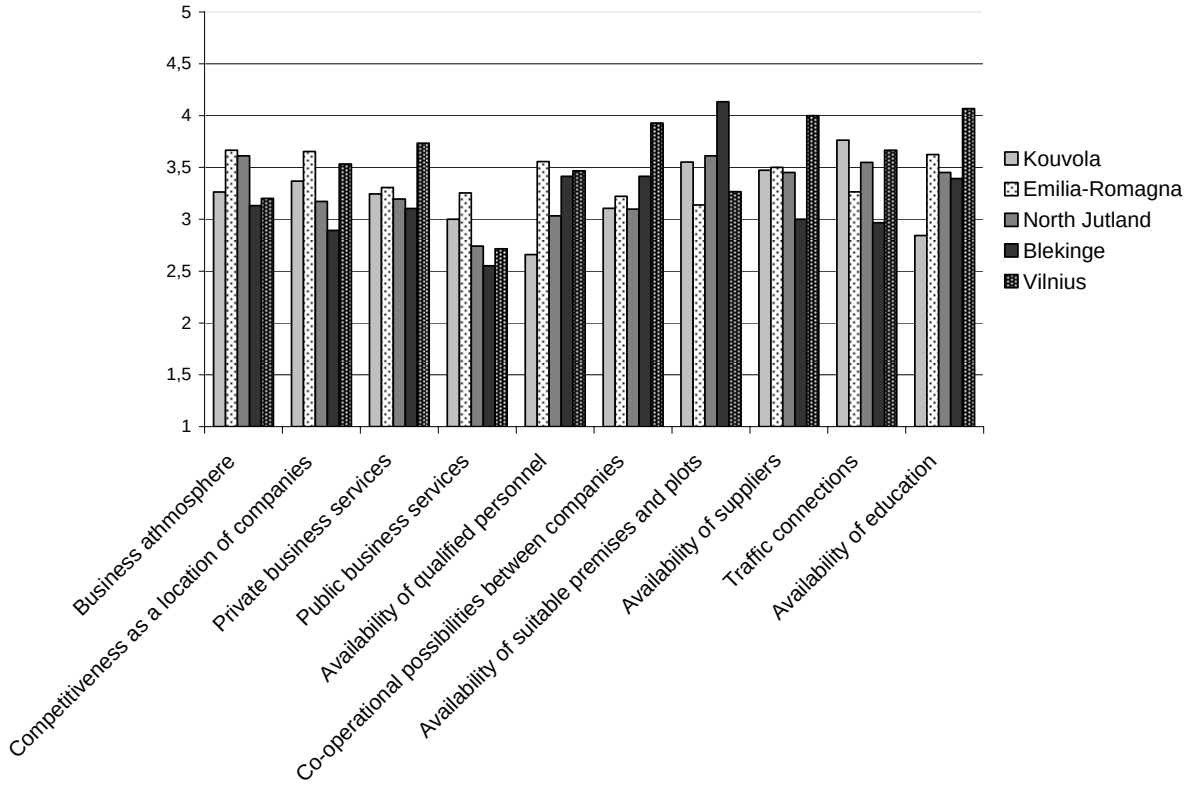

Figure 29. Comparison between the regions – Regional conditions

Co-operation is often a crucial part of innovation activities. Innovation policy is one way to advance co-operational possibilities, especially collaborations between companies and public institutions but also among companies. As notable in figure 30, the level of co-operation in the five regions in general was not very high. Comparatively speaking, companies in Emilia-Romagna seemed to collaborate more than the other regions with public institutions, universities and R&D institutions of the region on innovation processes. In Emilia-Romagna, the co-operation between companies and the aforementioned institutions is a generalized convention. As the region is large, there are resources to advance such co-operation. There are five universities and research centers in the area of Emilia-Romagna, that is quite many, which might further the co-operation. On average companies in all five regions co-operated mostly with other companies, both in the region and outside the region. In terms of increasing innovation, it would be advantageous to raise the level of co-operation, especially with public institutions, universities and R&D institutions, in all the regions. It is clear that the level of collaboration activities with EU programs is very low.

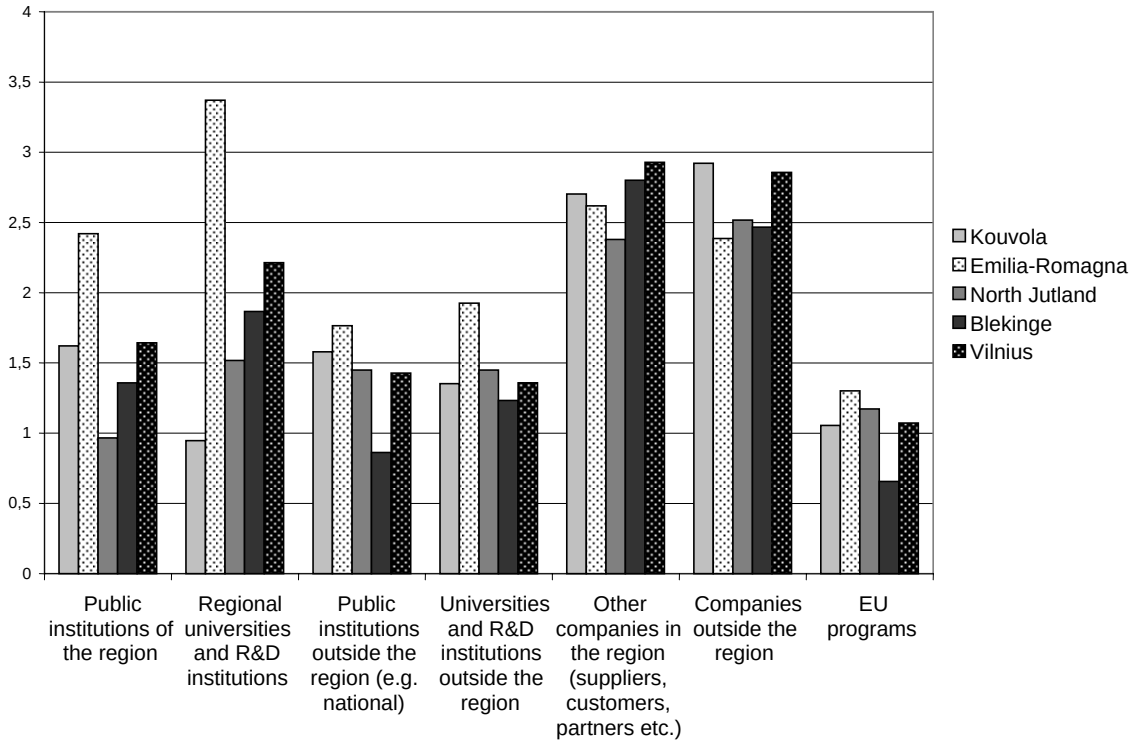

Figure 30. Comparison between the regions – Co-operation in terms of innovation processes

Companies in all five regions surveyed thought that the contribution of public institutions to innovation development in companies is very low (figure 31). The only exception is Emilia-Romagna where companies consider the contribution of regional administration, universities, R&D institutions and consultants rather good. In Blekinge, science parks are seen to make a relatively high contribution to innovation developments. It is very clear that the contribution of public institutions should be raised in order to boost innovation activity and related operational preconditions in SMEs.

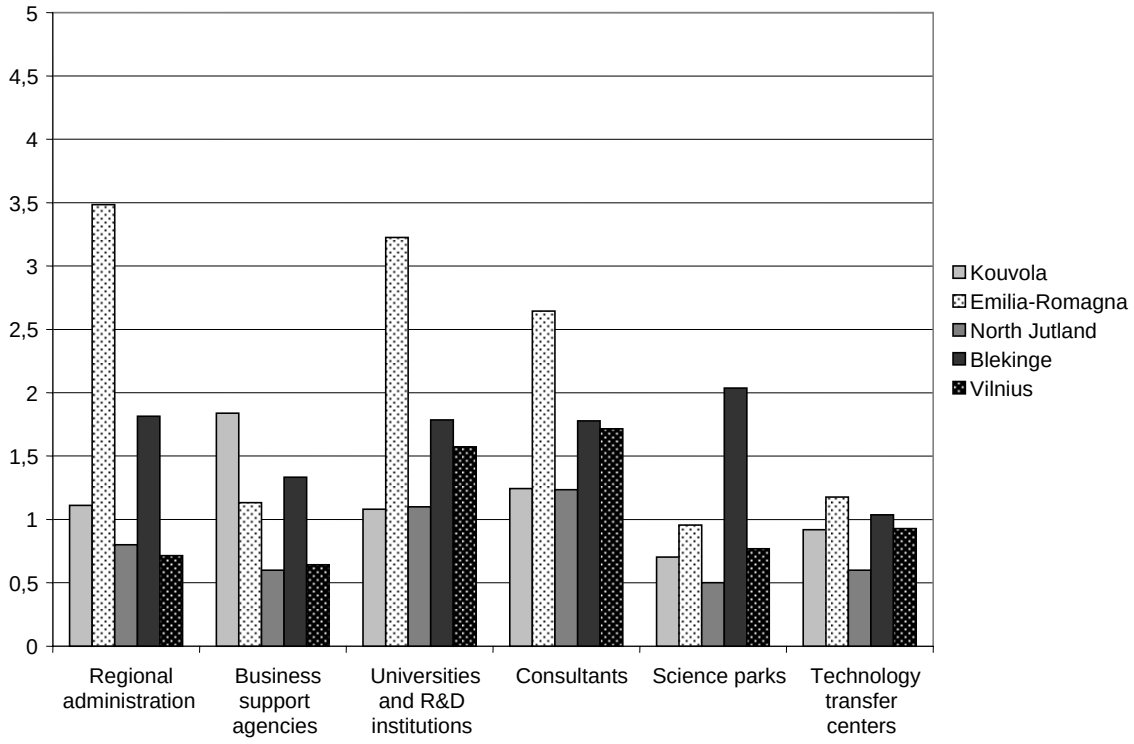

Figure 31. Comparison between the regions - Contribution of public institutions to innovation development in companies

The figure representing the average scores of statements on innovation policy can be found in appendix 8. In general, companies in the five regions seem to disagree somewhat with the statements describing the features of good innovation policy. It is possible that the condition of the regional innovation policy was not very good or did not reach the SMEs. Another option is that SMEs that responded to the questionnaire were not aware of innovation policy which includes the possibility that SMEs have actually benefited of the actions related to regional innovation policy but they have not though noticed it. It seems that, in most cases, companies in Emilia-Romagna and Kouvola agree more with the statements than companies in the other three regions. The scores of Vilnius were noticeably lower than the others, but since the number of observations was low, this result may not be reliable. An alternative explanation may be that, as mentioned, matters related to innovation policy are still rather new in Lithuania because of the late changeover to market economy system.

Figure 32 illustrates the average scores given to the importance of different regional innovation policies. On average, companies in Vilnius and Emilia-Romagna appear to

consider the importance of all the policies higher than the companies in the other three regions. Financial support and support on R&D seem to the most important to companies, excluding the companies in North Jutland which prefers guidance and information. According to this information regional innovation policies, in general, are not of major importance to the SMEs.

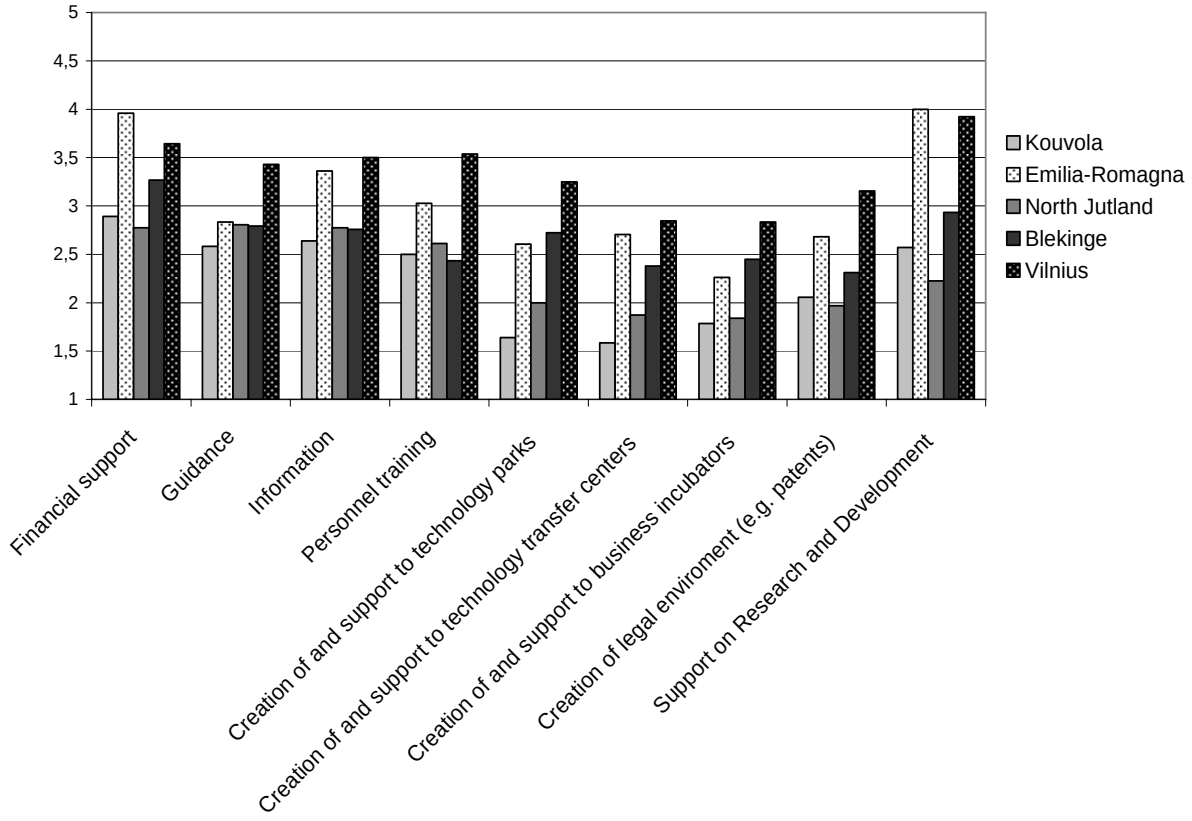

Figure 32. Comparison between the regions – Importance of regional innovation policies

7.2 Explanatory Study

To find out explanations for divergent outlooks and experiences of SMEs and to seek if the public support on the innovation developing has a positive effect on the activities of companies, the following targets to be contemplated were chosen:

1. *Relation between the background factors (age, net sales and number of employees of the company) and the companies' outlook of importance of regional innovation policy*
2. *Relation between companies' achievements and materialized support of public institutions to innovation development*
3. *Relation between the operational environment of the region and company achievements contributed by the regional innovation policy*

The propositions represent the areas that were found the most interesting after receiving the data, and therefore do not cover all the factors which could be used to explain SMEs experience on regional innovation policy. In order to search for connections mentioned above, it was chosen to calculate correlation coefficients between the chosen sectors of data and background factors. The actual research targets are represented in the table 7.

Table 7. Relations studied in the explanatory part of the study

Relations to be studied	**Variables/barometers**
The effect of age, net sales and number of employees on the experience of regional innovation policy	Age of the company
	Net sales of the company
	Number of employees in the company
	Importance of innovation policies (barometer F1)
The effect of public support in innovation development on the companies' achievements	Company achievements (barometer E1)
	Contribution of public institutions on innovation development in the company (barometer F2)
The effect of operational environment on the companies' achievements related to regional innovation policy	Characters of home region (barometer B1)
	Significance of regional innovation policy on the company's achievements (barometer G1)

Correlation means direct, linear connection between two variables. Thus, it can be examined if there a connection between two variables, how significant the connection is, or for example if there is connection between sectors of one variable. Correlation coefficient gives information about these issues. (Metsämuuronen 2003, p. 456)

Correlation coefficients are often used as a basis for further analysis, such as regression analysis (Metsämuuronen 2003, p. 468), but in this study it was chosen to use correlation coefficient method independently. The sample is relatively small and the purpose is to find out connections between variables, so calculating correlation coefficients were considered a suitable method for the survey to be able to make indicative findings.

Figure 33 represents the hypotheses of the correlations. Minus sign refers to expectation of negative correlations between the variables or barometers, plus refers to positive correlation. As can be seen, it is considered impending that correlation of net sales and number of employees is positive between the companies' views on importance of regional innovation policy whereas the correlation of age to it is negative. It is also expected that contribution of public institutions correlates positively with companies' achievements. Operational environment of the region is considered to have positive correlation with companies' views of the significance of regional innovation policy on their achievements.

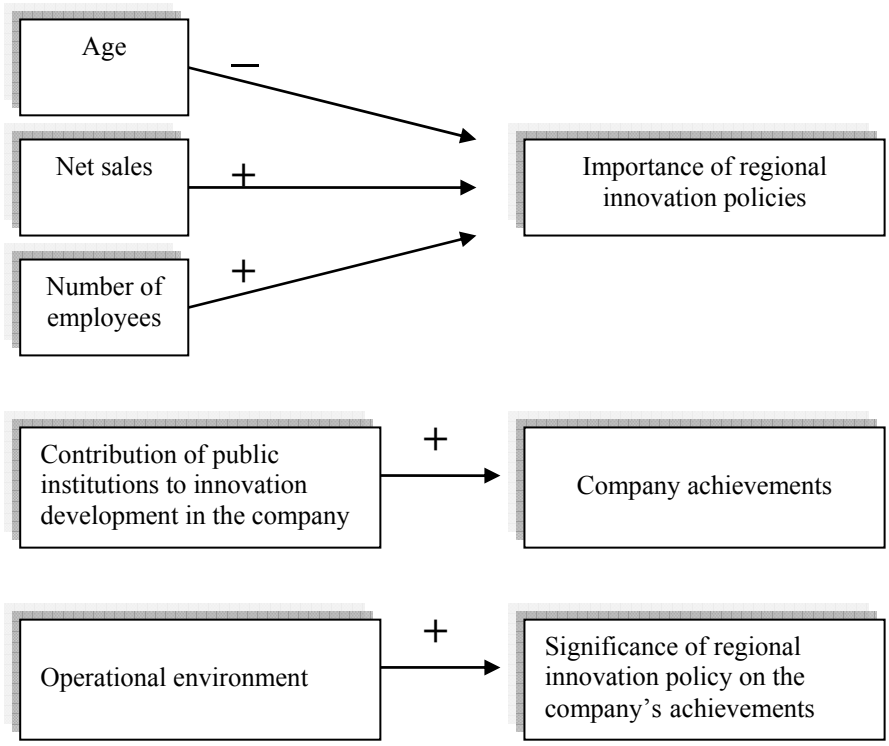

Figure 33. Hypotheses for the correlations

As mentioned, the number of observation (n=15) from Vilnius is too small to perform actual statistical analysis. Vilnius is therefore left out from this part of the study as the results would not be reliable enough.

7.2.1 Performance of the Study

Calculations were made using statistical analysis program SPSS (Statistical Package for the Social Sciences), which is software used to perform statistical operations and analyzes. To be able to perform the chosen analyses, the validity of the used data has to be tested. The above mentioned barometers were tested using Cronbach's alpha and background variables with Kolmogorov-Smirnov tests. Cronbach's alpha is a reliability coefficient which represents barometers' internal coherence. The value of alpha has to be at least 0,60 in preparatory study and 0,70 when testing actual theories (according to Nunnaly's theory in 1967). Kolmogorov-Smirnov test, for one, is used to test if the test distribution of variables is normal.

The results of the validation tests of the regional variables and barometers calculated with SPSS are represented in tables 7, 8, 9 and 10. In accordance with results of these tests, a proper method for calculating correlations was chosen.

As can be seen in table 8, values of Cronbach's alphas point out that the chosen barometers of Blekinge are valid. As the test distribution of variables is normal, correlations can be tested using Pearson's correlation method.

Table 8. Blekinge - Results of the validation tests

Variable/barometer	Cronbach's alpha	Normal distribution
Age of the company		yes
Net sales of the company		yes
Number of employees of the company		yes
Importance of innovation policies (F1)	0,877	yes
Company achievements (E1)	0,712	yes
Contribution of public institutions on innovation development in company (F2)	0,877	yes
Characters of home region (B1)	0,670	yes
Significance of regional innovation policy on companies' achievements (G1)	0,940	yes

Pearson's correlation reflects the degree of linear relationship between two variables. In this study, SPSS is used to calculate this correlation. It has to be noticed that two variables can be perfectly related, but if the relationship is not linear, Pearson's correlation coefficient does not directly show these relations.

As table 9 demonstrates, according to Cronbach's alphas, the chosen barometers of Emilia-Romagna are valid for testing. The test distribution is normal, too, so Pearson's correlation method is applicable.

Table 9. Emilia-Romagna - Results of the validation tests

Variable/barometer	Cronbach's alpha	Normal distribution
Age of the company		yes
Net sales of the company		yes
Number of employees of the company		yes
Importance of innovation policies (F1)	0,848	yes
Company achievements (E1)	0,776	yes
Contribution of public institutions on innovation development in company (F2)	0,727	yes
Characters of home region (B1)	0,764	yes
Significance of regional innovation policy on companies' achievements (G1)	0,886	yes

The chosen barometers of Kouvola region are valid for testing according to Cronbach's alphas, as can be seen in table 10. As the test distribution of all the variables is normal, it is possible to test correlations using Pearson's correlation method.

Table 10. Kouvola - Results of the validation tests

Variable/barometer	Cronbach's alpha	Normal distribution
Age of the company		yes
Net sales of the company		yes
Number of employees of the company		yes
Importance of innovation policies (F1)	0,873	yes
Company achievements (E1)	0,827	yes
Contribution of public institutions on innovation development in company (F2)	0,856	yes
Characters of home region (B1)	0,829	yes
Significance of regional innovation policy on companies' achievements (G1)	0,916	yes

As can be seen in table 11, values of Cronbach's alphas show that the chosen barometers of North Jutland are valid. The test distribution of variables is normal, and thus correlations can be tested using Pearson's correlation method.

Table 11. North Jutland - Results of the validation tests

Variable/barometer	Cronbach's alpha	Normal distribution
Age of the company		yes
Net sales of the company		yes
Number of employees of the company		yes
Importance of innovation policies (F1)	0,866	yes
Company achievements (E1)	0,739	yes
Contribution of public institutions on innovation development in company (F2)	0,894	yes
Characters of home region (B1)	0,771	yes
Significance of regional innovation policy on companies' achievements (G1)	0,948	yes

7.2.2 Findings Related to Company Characters

Blekinge

Correlation coefficients between companies' characteristics (age, net sales and number of employees) and barometer measuring importance on of actions related to regional innovation policy (barometer F1 in the questionnaire) were examined with cross-tabulation.

In the data of Blekinge, no relations with statistical significance of 99% were found. With a lower significance of 95 %, which means weak statistical significance, the following indicative findings were made:

1. Companies with fewer employees see that creation of and support to technology parks is more important than companies with relatively more employees.

2. Bigger companies, when it comes to number of employees, consider the creation and sustaining the legal operational environment of their home region more important than relatively smaller companies.

It seems that in Blekinge, there can be not found remarkable differences in companies' views on regional innovation policy that could be explained with companies' characteristics: age, net sales or number of employees. The only relations that were found with Pearson's correlation coefficients are related to number of employees in companies but do not still indicate that companies with a greater number of employees would consider different factors of innovation policy important than those with less employees.

Emilia-Romagna

In the data collected from Emilia-Romagna, no relations with statistical significance of 99% were found. With a lower significance of 95 %, the following indicative findings were made:

1. Younger companies seem to think that guidance (in know-how, market access, networking, etc.) as a sector of regional innovation policy is more important, than the older companies.
2. Younger companies seem to think that support on R&D as a sector of regional innovation policy is more important, than the older companies.
3. Companies with fewer employees see that support on R&D as a sector of regional innovation policy is more important, than companies with relatively more employees.

It seems that in Emilia-Romagna, as already detected in the case of Blekinge, there can be found no significant differences in the companies' outlooks on the regional innovation policy that could be explained with the characteristics of the companies. Two of the relations found with Pearson's correlation coefficients are related to age and one to number of employees, but no wide generalization can be made based on these findings. It is quite impending, for example, that young companies consider the role of guidance more important than those who have longer experience in business.

Kouvola

In the data of Kouvola, the following relations were found with the statistical significance of 99 %:

1. Companies with higher net sales seem to think that providing information as a sector of regional innovation policy is more important, than companies with lower net sales.
2. Companies with higher net sales seem to think that providing personnel training as a sector of regional innovation policy is more important, than companies with lower net sales

With lower statistical significance (95%) two more indicative relations were discovered:

3. Companies with fewer employees see that personnel training, as a form of innovation policy is more important, than companies with relatively more employees.
4. Companies with fewer employees see that creation of and sustaining the legal operational environment is more important, than companies with relatively more employees.

When it comes to Kouvola, it seems that in few areas of regional innovation policy, companies' net sales affect on their outlook. Number of employees can be considered such element, as well. However, there can not be found such characteristics in the companies, which could explicitly explain their views on the sectors of regional innovation policy as a whole.

North Jutland

In the data collected from North Jutland, no relations were found. Thus, on the strength of this study, differences in the outlooks of companies can not be explained with companies' age, net sales or number of employees. It has to be taken into consideration, however, that the sample was quite small and the used testing method does not disclose non-linear relations directly.

7.2.3 Findings Related to Public Contribution

Blekinge

Correlation coefficients between the variables measuring companies' achievements (barometer E1 in the questionnaire) and those measuring contribution of public institutions on innovation development in companies (barometer F2) were examined with cross-tabulation.

In the data collected from Blekinge, one relation with the statistical significance of 99 % was discovered:

1. Companies which have achieved sales growth in the last five years consider the contribution of technology transfer centers of the region lower than those who have not attained such progress.

With lower statistical significance (95 %) three more relations were found:

2. Companies which have developed new products or services in the last five years seem to consider the contribution of business support agencies higher than those who have not.
3. Companies which have succeeded in developing new business processes see that the contribution of business support agencies is higher than those who have not.
4. Companies which have succeeded in developing new business processes see that the contribution of universities and R&D institutions is higher than those who have not made such an achievement.

On the strength of the above presented relations, it seems that at least contribution of some public institutions seems to have connection with companies' achievements. There are, of course, other factors that affect on the companies achievements, but it is rather possible that the positive effect of public institutions weighs in the progress.

Emilia-Romagna

From the data of Emilia-Romagna, the following relations were found:

Companies which consider the contribution of technology transfer centers high seem to have gained the following achievements during the last five years better than those who consider the contribution lower:

1. Increase of profit (with statistical significance of 99 %)
2. Sales growth (significance of 95 %)
3. Development of new business processes (significance of 95 %)
4. Implementation of new technologies (significance of 95 %)

Companies which consider the contribution of science parks high seem to have gained the following achievements during the last five years better than those who consider the contribution lower:

1. Development of new business processes (significance of 99 %)
2. Sales growth (significance of 95 %)

Companies which consider the contribution of business support agencies high seem to have gained the following achievements during the last five years better than those who consider the contribution lower:

1. Development of new business processes (significance of 99 %)
2. Sales growth (significance of 95 %)

In the case of Emilia-Romagna there seems to be relatively many connections between the achievements of companies and their outlook of the contribution of public institution on the innovation development. Especially the contribution of technology transfer centers seem to correlate with companies' achievements. As mentioned, public contribution can only be one of the factors of the success of the companies.

Kouvola

In the data of Kouvola, no relations with statistical significance (99%) were found. With lower significance of 95 %, the following two indicative findings were made:

1. Companies which have developed new business processes in the past five years seem to consider the contribution of business support agencies higher than those who have not.
2. Companies who have achieved sales growth in the past two years seem to think that the contribution of science parks is higher than those who have not.

As can be discovered, there are no major findings that could extensively show that there is a connection between public support and companies' achievements in Kouvola region. However, especially the first one of the indicative findings presented above seems to be reasonable; business support agencies could fairly well contribute to development of business processes.

North Jutland

In the data collected from North Jutland, no relations were found. The sample was relatively small, so it could be that the results are not entirely extensive. Nonetheless, there is a strong possibility that there is no connection between public contribution and success of the companies or companies do not simply observe the public support and thus no relation can be found. This could be examined afresh with a further, wider research with a larger sample.

7.2.4 Findings Related to Operational Environment

Blekinge

The correlation coefficients between factors of regional operational environment, which is actually one result of the regional innovation policy, and significance of the regional innovation policy on companies' achievements were examined.

In Blekinge, the following relations were found with statistical significance of 99 %:

1. Companies which considered the co-operational possibilities between companies and traffic connections in the region to be good perceived the effect of the regional innovation policy on implementation of new technologies to be stronger than the other companies.

With lower significance (95 %) it was discovered that:

2. Companies which see that the location of the region is competitive consider the effect of the regional innovation policy on implementation of new technologies and increase of profit stronger than the other companies.
3. Companies which considered the availability of education in the region to be good perceived the effect of the regional innovation policy on implementation of new technologies and development of new business processes weaker than those which do not.

As notable, few indicative connections were found. Actual conclusion can yet not be made based on them. The finding number 3 above seems to be somewhat inconsistent but it would require more accurate examination to find out whether there is a reason behind the connection or if it is only a chance.

Emilia-Romagna

From the data of Emilia-Romagna, lots of correlations were could have been found. Firstly, companies which consider the public business services of the region to be good seem to found the effect of the regional innovation policy stronger than companies which were not of the opinion, on all the included achievements:

1. Implementation of new technologies, development of new business processes and sales growth (with statistical significance of 99 %)

2. Development of new products or services and increase of profit (significance of 95 %)

It was also indicatively discovered that companies which consider the business atmosphere of the region to be good, seem to found the effect of the regional innovation policy stronger than companies which were not of the opinion, on all the included achievements:

1. Development of new business processes, sales growth and increase of profit (significance of 99 %)
2. Development of new products or services and implementation of new technologies (significance of 95 %)

Companies which for one see that the location of the region is competitive seem found the effect of the regional innovation policy stronger than companies which were not of the opinion, on all the included achievements:

1. Development of new business processes and sales growth (significance of 99 %)
2. Development of new products or services, increase of profit and implementation of new technologies (significance of 95 %)

Furthermore, companies which consider the private business services of the region are good seem found the effect of the regional innovation policy on the following achievements stronger than those companies which were not of the opinion:

1. Development of new business processes and increase of profit (significance of 99 %)
2. Sales growth and implementation of new technologies (significance of 95 %)

It was also found that companies which think that the availability of education in the region is good, seem to consider the effect of regional innovation stronger than the other

companies on development of new products or services and implementation of new technologies (with statistical significance of 99 %).

The above mentioned indicate findings would keenly suggest that at least in the case of Emilia-Romagna, there are relation between companies' views of their home regions and effect of regional innovation policy on their achievements. Both of these barometers measure in a way the results of regional innovation policy and thus it could be argued that political actions related to innovation has reached at least some part of the companies in the region. It is worth notable that these results do not exclude the possibility that some companies of the region simply see the results of regional innovation policy in a better light than others. They have probably benefited from the public support on innovation development and succeeded to enjoy the good factors of their environment. On the other hand, it is remarkable that in Emilia-Romagna, innovations and innovation policy are already matters of attention which should be probably discernible in the views of the companies.

Kouvola

In the data collected from Kouvola, the following indicative finding was made with statistical significance of 99 %:

1. Companies which consider the availability of qualified personnel is good seem to think that the effect of the regional innovation policy on development of products or services, implementation of new technologies and development of new business processes is stronger than those which do not.

With lower significance (95 %) it was discovered that, based on the correlations:

2. Companies which consider private business services of the region good, see that the effect of the regional innovation policy on implementation of new technologies and development of new business processes is stronger than those which do not.

3. Companies which think that the location of the region is competitive, consider the effect of the regional innovation policy on development of new products or services and new business processes is stronger than the other companies.

It was also found out that companies which consider the co-operational possibilities between companies in the region good seem to think that:

1. The effect of the regional innovation policy on implementation of new technologies and development of new business processes is strong (with statistical significance 99 %)
2. The effect of regional innovation policy on development of new products or services is strong (significance 95 %)

From the data of Kouvola region, quite a lot indicative relations were found. Based on the calculated correlations, it seems that there are connections between the companies' views of their home regions and effect of regional innovation policy on their achievements. As both these barometers measure the results of regional innovation policy in a way, it could be argued that political actions related to innovation have reached at least some part of the companies in the region. However, these results are very indicative because of the size of the sample and the used way of study.

North Jutland

In the data of North Jutland, the following suggestive findings were made with statistical significance of 95 %:

1. Companies which see that the business atmosphere of the region is good seem to consider the effect of regional innovation policy on sales growth stronger than those which were not of the opinion.
2. Companies which see that the private business services of the region are good seem to consider the effect of regional innovation policy on sales growth stronger than those which were not of the opinion.

It was also discovered that there was a positive correlation between the view of availability of suitable premises and plots and all the achievement included in the study. As notable, very few indicative connections were found. As mentioned above in the case of Blekinge, no actual conclusion can yet be made based on them. In the data of North Jutland, it seems that there are some connections but establishing these for sure would require further exploration in larger scale.

8 CONCLUSIONS

8.1 General Outlook of SMEs

As a whole, there is much to do and develop in regional innovation policy from the SMEs' point of view. It seems that regional innovation policy is not very effective or simply does not reach the SMEs as it is intended to. Companies' awareness about the possibilities that policy actions could offer them should be increased. It would be valuable to ensure that the actions of the regional innovation policy are targeted to smaller enterprises too, as SMEs are the major enterprise group in Europe. It is worth dicerning that regional innovation policy does not necessarily need to be largely visible as it is not the intrinsic value of such policy. The matter of consequence is that all the support and actions related to innovation policy work and benefit the companies, if only invisibly. Nonetheless, companies' consciousness of regional innovation policy would help them to profit fully from the support policy could offer.

SMEs seem to be of the opinion that public institutions do not engage very actively in innovation development of companies as is with the other areas of regional innovation policy. It may be that SMEs are not necessarily aware of the regional innovation policy or the possibilities it could offer, but this does not mean that they have never benefited from the political action at some point of their activities. One possibility is, of course, that SMEs are for some reason outside the sphere of influence of regional innovation policy. These two different cases require different remedies in order to redress the situation.

In general, it seems that innovation policy is not an important issue to SMEs. From their point of view, it appears that regional innovation policy is not a consequential factor neither when it comes to success nor to failure of companies or their home regions. SMEs do not have a high level of co-operation with other actors related to innovation activities in the regions. However, this is not necessarily an imperfection from SMEs' point of view as they do not axiomatically set a value to co-operation or see it could benefit them.

The regional differences have to taken into account when discussing the results of this study. Lithuania is a new member state of EU where innovation and related policies are

new issues, especially for the small companies. This can be seen in the findings of Vilnius, at least at some scale. In contrast to Vilnius, Emilia-Romagna is a region where innovation policy is recognized and has affect on the innovation environment and thereby in innovation activities of the companies in the region.

It is worth reiterating that within the limits of this study no absolute conclusions can be announced. The main aim of this study was to give an indicative outlook of the current situation and to draw attention to the most important areas of innovation policy from the SMEs' point of view in order to ensure the success of future activities.

8.2 Explanatory Connections

The examination of relation between companies' age, net sales and number of employees and views on importance of different sectors of regional innovation policy disclosed no seminal findings. Hence, based on this study, no authentic conclusions can be made. Some impending relations, for example that guidance in more important to younger companies (from the data of Emilia-Romagna), were found. The findings were quite interesting, but not of that kind which could unambiguously or extensively explain the SMEs' views on the regional innovation policy of their regions.

When it comes to relation between public contribution to innovation development and companies' achievements, it can be stated that no epoch-making findings were discovered either. A group of correlations were found, based on which it can be claimed that there seems to be some connections between the achievements and public contribution. For example, companies which have developed new business processes considered the contribution of business support agencies relatively good in Kouvola and Blekinge. However, the results are not credible enough to make assured implications in Blekinge, Kouvola and North Jutland. From the data of Emilia-Romagna, there were recovered a parcel of significant correlations. The findings were larger than those made from the other three regions, which may reflect the considerable role of innovation in the region. Based on the relations found from Emilia-Romagna it could be alleged that companies' achievements in the region can be at least at some level explained with the public contribution to innovation development.

In the survey of possible connections between the two outcomes of regional innovation policy, regional operational environment and significance of the regional innovation policy on companies' achievements, some relations were found. Again, no certain conclusion can be made based on these findings but they suggest that these outcomes are connected with each other. Once more, it is evident that from the data of Emilia-Romagna there can be found more correlations than from the other three regions.

The above presented results imply that trying to find some explanatory factors for the SMEs' outlook on the regional innovation policy is not a simple assignment. The result of this study is that connection can be found, they may also reflect the regional innovation-related conditions and they are indeed worth researching.

8.3 Recommendations for Further Research

The data collected in connection with this study is intentionally is quite expansive when it comes to themes it covers. Data was not completely utilized in the scale of master's thesis work so it is planned that in the near future the data will be exploited in further research related to subject of this study. As mentioned, relationship between SMEs and regional innovation policy in not so far actively researched area and hence there still remain many interesting subjects to explore.

This study only covered the SMEs' point of view, and the opposite side of the regional innovation policy, the policy makers, was not discussed. The model of "ideal", effective innovation policy was delineated in order to form the questionnaire to be able to reflect SME's side of the issue. In further research it would be interesting to conflate policy makers' real ideas and purposes of innovation policy with the opinions of companies, and compare them with each other. This would be the right method to study real, materialized innovation policy in the regions.

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APPENDIX 1

The questionnaire used in the survey

A. Describing the company at issue

1. Home region of your company (Choose one):
    - Blekinge
    - Emilia-Romagna
    - Kouvola Region
    - North Jutland
    - Vilnius Region

2. Areas of business (Choose the main one):

    - Options according to US SIC

3. Major products of your company (Mention at least one):

4. Products of your company are sold (Choose one):

    - only in the market of the home region
    - mainly (over 50 %) in the market of home region
    - mainly (over 50 %) in markets outside the home region
    - only in markets outside the home region
    - only in markets outside the home country

5. The division of sales in terms of business/consumer customers (Choose one):

    - Only to consumer customers
    - Mainly to consumer customers
    - Mainly to business customers
    - Only to business customers

6. Number of employees (Choose one):

    - 1 to 3
    - 4 to 10
    - 11 to 50
    - 51 to 100
    - 101 to 249

7. Company was established in year:

8. Legal status of your company (e.g. Limited Liability Company):

9. Position of your company within business/ industry (Choose one):

    - Local business network member (e.g. regional cluster or agglomeration of companies in the same business branch in the region)
    - Single player
    - Member of (large) international network

    If your company is a part of a network, which network it is?

10. Relationships with other companies in the region (Choose):

    - Technology-driven
    - Formal (signed contract/ formal procedure)
    - Informal

11. Net sales of your company (year 2005, in €)

B. Describing the home region of the company

1. Evaluate the following characters of the home region of your company (Choose: 1 = very weak…5 = very good)

    - Business atmosphere in general
    - Competitiveness as a location of companies
    - Private business services
    - Public business services
    - Availability of qualified personnel
    - Co-operational possibilities between companies
    - Availability of suitable premises and plots
    - Availability of suppliers
    - Traffic connections
    - Availability of education

C. Innovation activities of the company

1. Type of innovations in your company (Choose one or more):

    - Technology innovations
    - Product innovations
    - Production/process innovations
    - Service innovations
    - Other (Please, define)

2. Evaluate your innovation activities in terms of developing/applying technologies (Choose: 1= We mostly apply technologies developed by others…5= We mostly develop technologies applied by others)

3. Sources of innovations of your company (Choose one or more):

    - Systematic in-house R&D and innovation processes
    - Suppliers
    - Customers
    - Employees
    - Other (Please, define)

4. Importance of innovations to your company (Choose: 1=very low…5= very high)

5. Amount of R&D spending (year 2005, in €)

D. Co-operational issues in the innovation process

1. Evaluate the co-operation of your company with the following partners in terms of innovation process (Choose: 0= no experience , 1 = no co-operation…5= very high level of co-operation):

    - Public institutions of the region
    - Regional universities and R&D institutions
    - Public institutions outside the region (e.g. national)
    - Universities and R&D institutions outside the region
    - Other companies in the region (suppliers, customers, partners etc.)
    - Companies outside the region
    - EU programs

E. Company achievements

1. Evaluate the following statements related to achievements of your company during the past five years (Choose: 1= strongly disagree…5= strongly agree):

    - We have developed new products/ services
    - We have implemented new technologies
    - We have developed new business processes
    - We have achieved sales growth
    - We have achieved increase of profit

F. Innovation policies - resources and processes

1. Evaluate the importance of the following regional innovation policies to your company (Choose: 1 = insignificant…5 = very important):

    - Financial support
    - Guidance (technological know-how, market access, networking etc.)
    - Information
    - Personnel training
    - Creation of and support to technology parks
    - Creation of and support to technology transfer centers
    - Creation of and support to business incubators
    - Creation of legal environment (e.g. patents)
    - Support on Research and Development
    - Other (Please, define)

2. Evaluate the contribution of the following public institutions to innovation development in your company (Choose: 0 = no experience, 1 = very low…5 = very high):

    - Regional administration
    - Business support agencies
    - Universities and R&D institutions
    - Consultants
    - Science parks
    - Technology transfer centers

3. Evaluate the following statements related to innovation policies in your region (In this context universities and public R & D institutions are counted under the concept "public institutions") (Choose: 1= strongly disagree…5= strongly agree):

    - Public institutions of the region provide sufficient help in the starting stage of new business
    - Public institutions of the region finance R&D
    - Public institutions of the region provide help in identifying and developing market opportunities
    - Public institutions of the region provide support in developing clusters
    - Public institutions of the region provide support in networking
    - Public institutions of the region operate as linkages between science and business/industry
    - Public institutions of the region promote international linkages
    - Public institutions of the region provide infrastructure to innovation processes
    - Public institutions of the region promote innovation-favorable atmosphere
    - Public institutions of the region promote technology-transfer
    - Public institutions of the region support developing human resources
    - Public institutions of the region support innovating industries/businesses
    - Public institutions of the region provide guidance when needed
    - Government institutions purchase innovative products
    - Educational policies have positive impact on innovation performance
    - Regulation policies shape innovation performance
    - Innovation policies and related support are strongly technology-driven
    - Government ensures political stability

4. Which of the following innovation policy areas are the most important to innovation development in your company (Choose three):

    - Help and guidance in the starting stage of new business
    - Finance of R&D
    - Support in developing market opportunities
    - Support in clustering
    - Support in networking
    - Linkages between science and business/industry
    - Infrastructure to innovation processes
    - Innovation-favorable atmosphere
    - Effective technology-transfer
    - Support in developing human resources
    - General guidance in business available
    - Service-oriented actions of innovation policies
    - Region-specific actions of innovation policies
    - Other (Please define)

5. Evaluate the success of the political actions targeted to innovation activities of companies in your region (Choose 1= ineffective, 2= poor, 3= moderate, 4= good, 5= excellent)

G. Innovation policies – outcomes and impact

1. Evaluate the impacts of regional innovation policies on the following achievements in your company (Choose: 1= very low impact…5= very high impact):

    - Development of new products / services
    - Implementation of new technologies
    - Development of new business processes
    - Sales growth
    - Increase of profit
    - Other (Please define)

H. Innovation management – resources and processes

1. Evaluate the rate of the following investments in your company (Choose: 0= no investment, 1= very low…5 = very high)

    - Investments in basic research
    - Investments in product development
    - Investments in marketing
    - Investments in technology development
    - Investments in knowledge management

2. Evaluate the extent of your company applying the following processes (Choose: 0= no experience, 1=low level of application… 5= high level of application):

    - Cooperation within international business networks
    - Cooperation within local business networks
    - Cooperation with universities
    - Leadership training and/or consulting
    - Employees' training and/or consulting
    - Benchmarking with local business partners and/or competitors
    - Benchmarking with international business partners and/or competitors
    - Internal benchmarking
    - Other (Please, define)

I. Innovation management – outcomes and impact

1. Evaluate the impact of the investments and processes (mentioned in the last two questions) on the following achievements of your company (Choose: 1= very low impact… 5= very high impact):

    - Development of new products/ services
    - Implementation of new technologies
    - Development of new business processes
    - Sales growth
    - Increase of profit
    - Other (Please, define)

Classification according to US SIC used in question A2 :

Agriculture, forestry and Fishing

- Agricultural production crops
- Agricultural production livestock and animal specialties
- Agricultural services
- Forestry
- Fishing, hunting and trapping

Mining

- Metal mining
- Coal mining
- Oil and gas extraction
- Mining and quarrying of nonmetallic mineral, except fuels

Construction

- Building construction general contactors and operative builders
- Heavy construction other than building construction general
- Construction special trade contractors

Manufacturing

- Food And Kindred Products
- Tobacco Products
- Textile Mill Products
- Apparel And Other Finished Products Made From Fabrics And Similar Materials
- Lumber And Wood Products, Except Furniture
- Furniture And Fixtures
- Paper And Allied Products
- Printing, Publishing, And Allied Industries
- Chemicals And Allied Products
- Petroleum Refining And Related Industries
- Rubber And Miscellaneous Plastics Products

- Leather And Leather Products
- Stone, Clay, Glass, And Concrete Products
- Primary Metal Industries
- Fabricated Metal Products, Except Machinery And Transportation Equipment
- Industrial And Commercial Machinery And Computer Equipment
- Electronic And Other Electrical Equipment And Components, Except Computer Equipment
- Transportation Equipment
- Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks
- Miscellaneous Manufacturing Industries

Transportation, Communications, Electric, Gas, and Sanitary Services

- Railroad Transportation
- Local And Suburban Transit And Interurban Highway Passenger Transportation
- Motor Freight Transportation And Warehousing
- Postal Service
- Water Transportation
- Transportation By Air
- Pipelines, Except Natural Gas
- Transportation Services
- Communications
- Electric, Gas, And Sanitary Services

Wholesale Trade

- Wholesale Trade-durable Goods
- Wholesale Trade-non-durable Goods

Retail Trade

- Building Materials, Hardware, Garden Supply, And Mobile Home Dealers
- General Merchandise Stores
- Food Stores
- Automotive Dealers And Gasoline Service Stations
- Apparel And Accessory Stores
- Home Furniture, Furnishings, And Equipment Stores
- Eating And Drinking Places
- Miscellaneous Retail

Finance, Insurance, and Real Estate

- Depository Institutions
- Non-depository Credit Institutions
- Security And Commodity Brokers, Dealers, Exchanges, And Services
- Insurance Carriers
- Insurance Agents, Brokers, And Service
- Real Estate
- Holding And Other Investment Offices

Services

- Hotels, Rooming Houses, Camps, And Other Lodging Places
- Personal Services
- Business Services
- Automotive Repair, Services, And Parking
- Miscellaneous Repair Services
- Motion Pictures
- Amusement And Recreation Services
- Health Services
- Legal Services
- Educational Services
- Social Services
- Museums, Art Galleries, And Botanical And Zoological Gardens
- Membership Organizations
- Engineering, Accounting, Research, Management, And Related Services
- Private Households
- Miscellaneous Services

Public Administration

- Executive, Legislative, And General Government, Except Finance
- Justice, Public Order, And Safety
- Public Finance, Taxation, And Monetary Policy
- Administration Of Human Resource Programs
- Administration Of Environmental Quality And Housing Programs
- Administration Of Economic Programs
- National Security And International Affairs
- Non-classifiable Establishments

APPENDIX 2

Background information - Regional division of answers

Each table represents the regional division of responses related to background factors of companies.

1. Products of the companies are sold:

	Kouvola	Emilia-Romagna	North-Jutland	Blekinge	Vilnius	Total
only in the market of the home region	5	1	1	6	1	14
mainly (over 50 %) in the market of home region	10	6	9	7	1	33
mainly (over 50 %) in markets outside the home region	19	59	19	14	10	121
only in markets outside the home region	3	4	1	5	1	14
only in markets outside the home country	1	3	1	1	2	8
N/A		1				1
Total	38	74	31	33	15	190

2. The division of sales in terms of customer (business to consumer/business; B2C/B2B):

	Kouvola	Emilia-Romagna	North-Jutland	Blekinge	Vilnius	Total
Only B2C	1	10	2			13
Mainly B2C	7	26	6	4	8	51
Mainly B2B	14	22	7	13	5	61
Only B2B	16	14	16	16	2	64
N/A		2				2
Total	38	74	31	33	15	190

3. Number of employees:

	Kouvola	Emilia-Romagna	North-Jutland	Blekinge	Vilnius	Total
1-3	10	2	4	11	3	30
4-10	12	9	6	11	3	41
11-50	14	32	13	11	6	76
51-100	1	13	5		2	21
101-249	1	15	3		1	20
N/A		3				3
Total	38	74	31	33	15	190

4. Position of the company within business/industry:

	Kouvola	Emilia-Romagna	North-Jutland	Blekinge	Vilnius	Total
Local business network member	3	3	7	14	6	33
Single player	35	64	22	15	7	143
Member of (large) international network		5	2	3	2	12
N/A		2		1		3
Total	38	74	31	33	15	190

5. Relationship with the other companies of the home region:

	Kouvola	Emilia-Romagna	North-Jutland	Blekinge	Vilnius	Total
Technology-driven	4	17	3	1	11	36
Formal	11	22	5	3	1	42
Informal	13	25	18	20	2	78
Formal, Informal	3		1	5		9
Technology driven, Formal, Informal			2	1		3
Technology-driven, Informal		1			1	2
N/A	7	9	2	3		21
Total	38	74	31	33	15	190

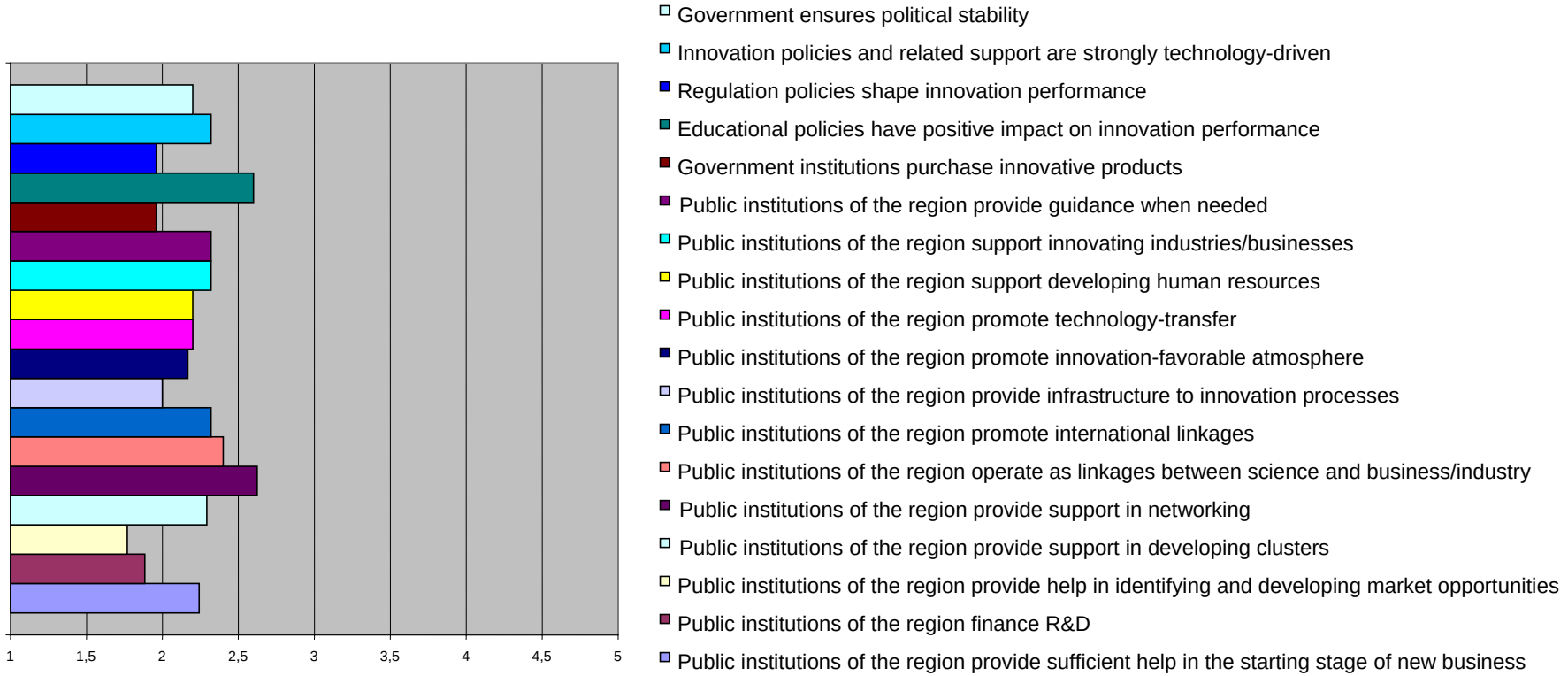
6. Age of the company:

Distribution of all the observations:

Age of the company	Total
≤ 10	65
11-20	43
21-30	36
≥ 31	37
Total	181

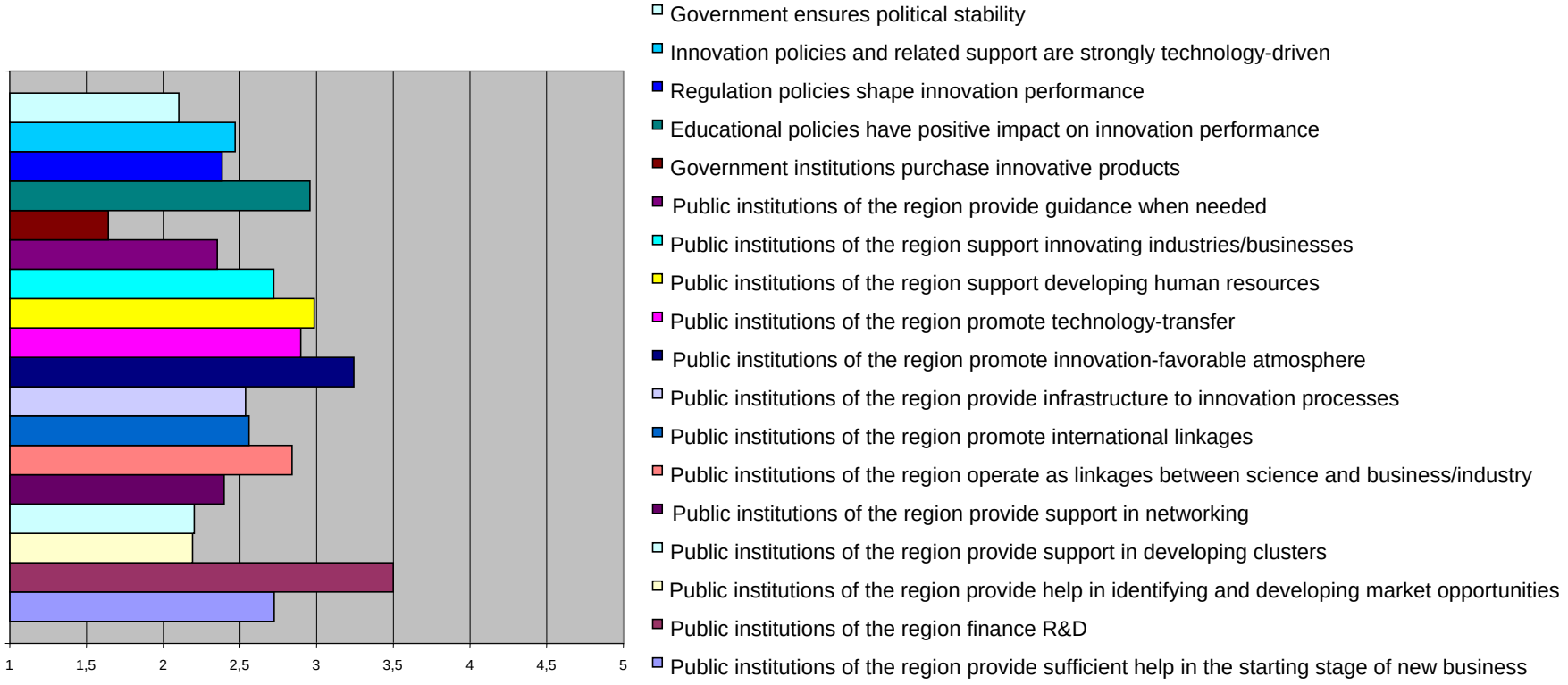
APPENDIX 3

Blekinge - Statements related to regional innovation policy



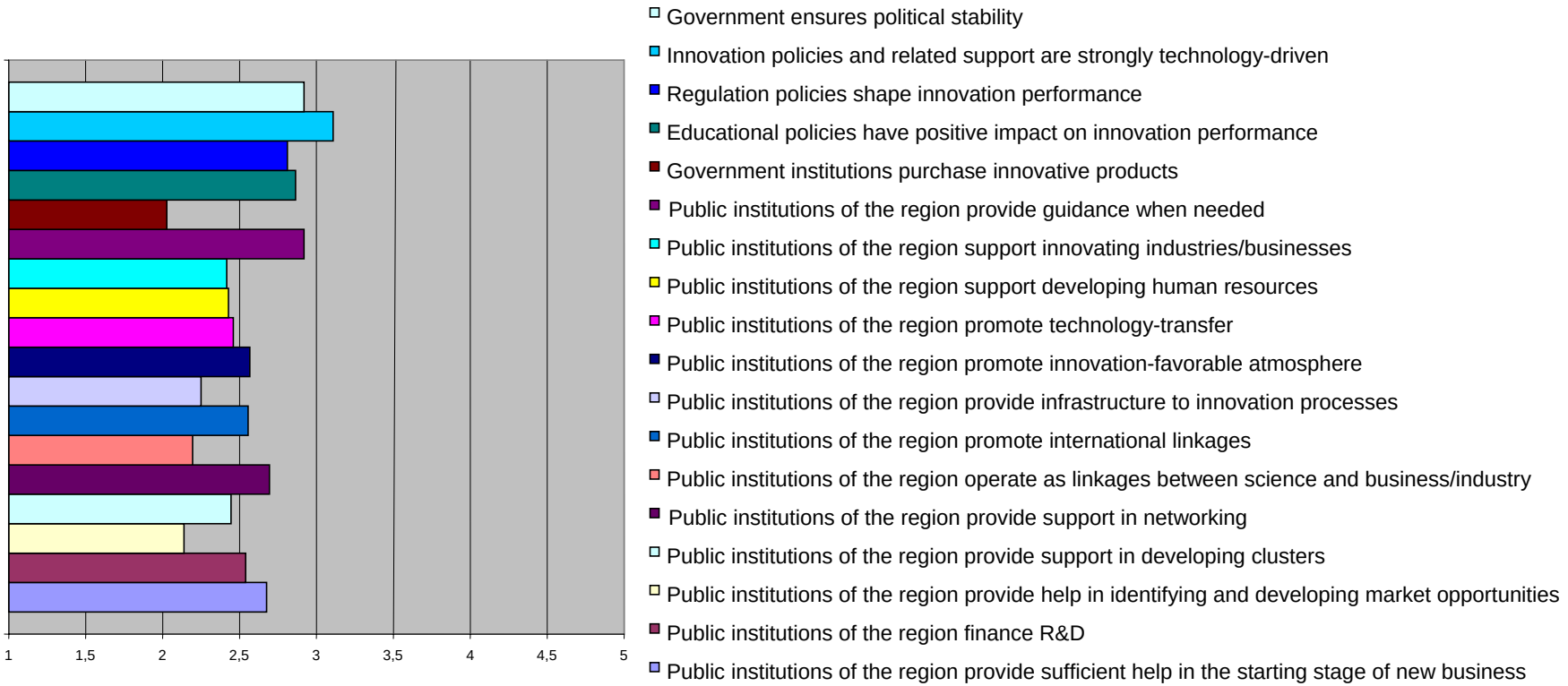
APPENDIX 4

Emilia-Romagna - Statements related to regional innovation policy



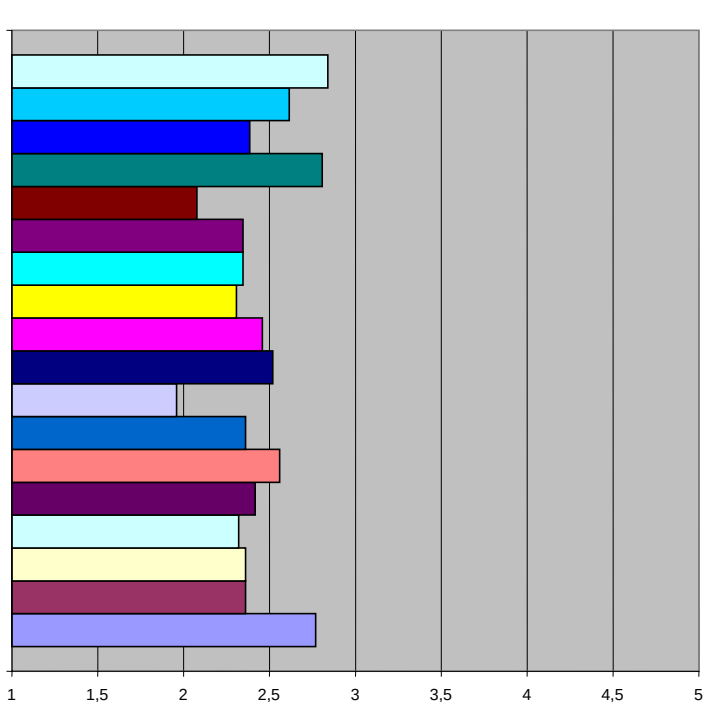
APPENDIX 5

Kouvola - Statements related to regional innovation policy



APPENDIX 6

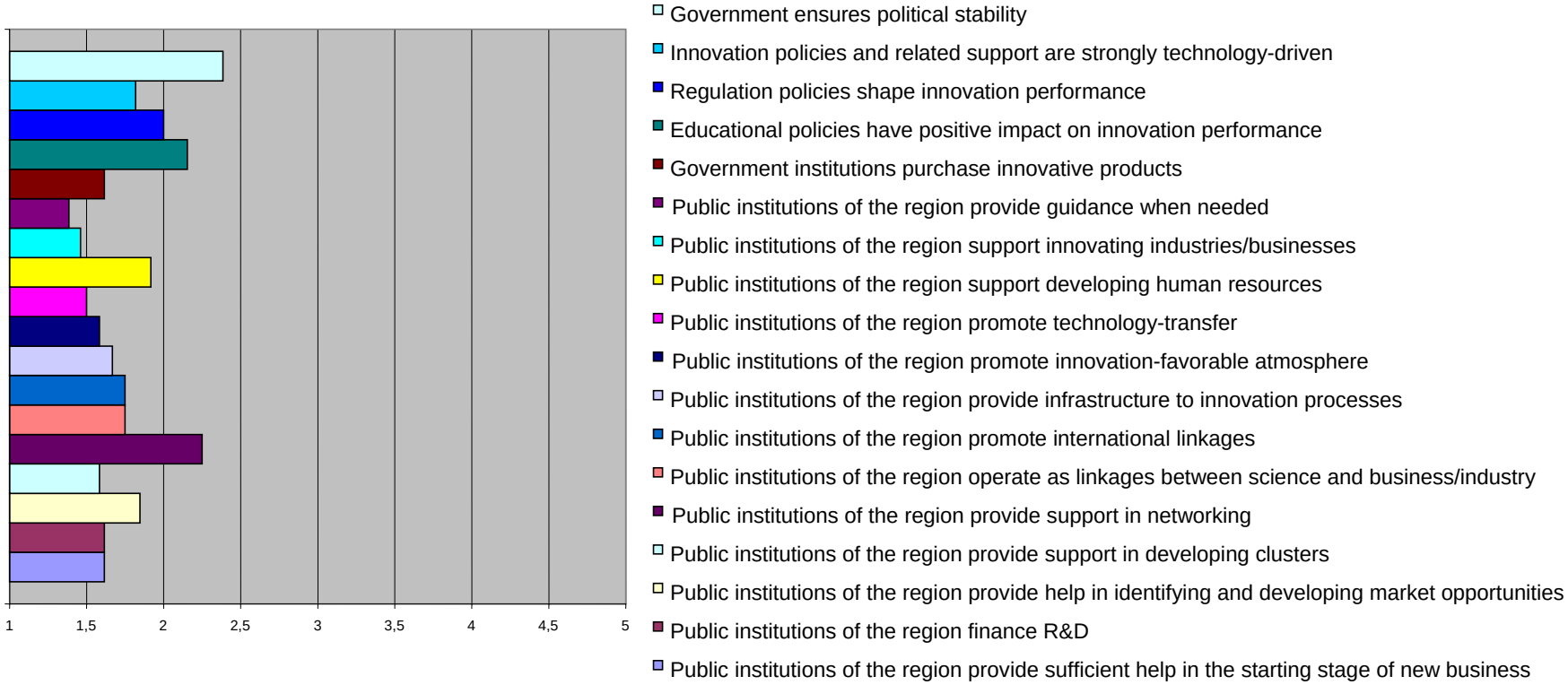
North Jutland - Statements related to regional innovation policy



- Government ensures political stability
- Innovation policies and related support are strongly technology-driven
- Regulation policies shape innovation performance
- Educational policies have positive impact on innovation performance
- Government institutions purchase innovative products
- Public institutions of the region provide guidance when needed
- Public institutions of the region support innovating industries/businesses
- Public institutions of the region support developing human resources
- Public institutions of the region promote technology-transfer
- Public institutions of the region promote innovation-favorable atmosphere
- Public institutions of the region provide infrastructure to innovation processes
- Public institutions of the region promote international linkages
- Public institutions of the region operate as linkages between science and business/industry
- Public institutions of the region provide support in networking
- Public institutions of the region provide support in developing clusters
- Public institutions of the region provide help in identifying and developing market opportunities
- Public institutions of the region finance R&D
- Public institutions of the region provide sufficient help in the starting stage of new business

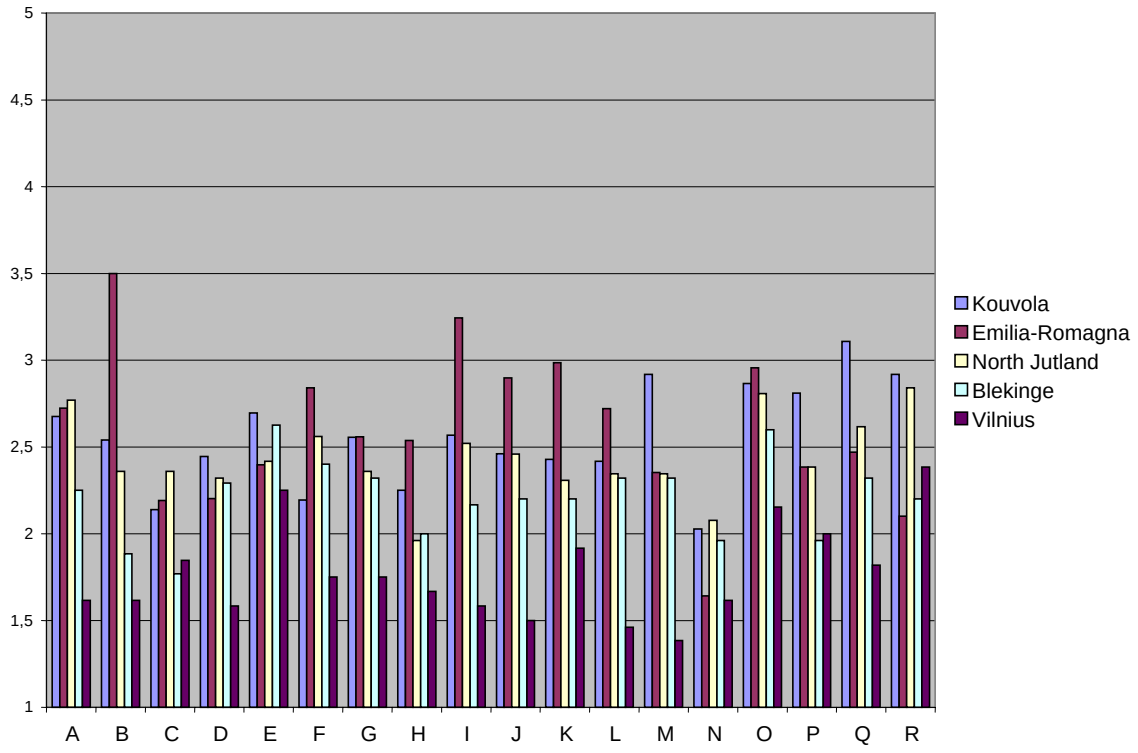
APPENDIX 7

Vilnius - Statements related to regional innovation policy



APPENDIX 8

Regional Comparison - Statements related to regional innovation policy



A= Public institutions of the region provide sufficient help in the starting stage of new business

B= Public institutions of the region finance R&D

C= Public institutions of the region provide help in identifying and developing market opportunities

D= Public institutions of the region provide support in developing clusters

E= Public institutions of the region provide support in networking

F= Public institutions of the region operate as linkages between science and business/industry

G= Public institutions of the region promote international linkages

H= Public institutions of the region provide infrastructure to innovation processes

I= Public institutions of the region promote innovation-favorable atmosphere

J= Public institutions of the region promote technology-transfer

K= Public institutions of the region support developing human resources

L= Public institutions of the region support innovating industries/businesses

M= Public institutions of the region provide guidance when needed

N= Government institutions purchase innovative products

O= Educational policies have positive impact on innovation performance

P= Regulation policies shape innovation performance

Q= Innovation policies and related support are strongly technology-driven

R= Government ensures political stability