The Role of Creative Industries in National Innovation System: The Creative Clusters of Moscow

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Preface

Innovations are one of the most current topics in modern business environment. Also creative industries are increasingly acknowledged in public and political discussions for their significant economic potential. For Russia, a debate over economic modernization and building innovative economy has been on the rise since the early stages of presidency of Dmitry Medvedev. Nevertheless, the innovation discussion has mostly been limited to technological innovations only. Although, the recognition of economic impact of creative industries is gradually growing in Russia, the innovative potential of these industries is largely ignored by the decision makers. The aim of this study is to demonstrate the connection of creative industries with innovations and include creative industries into the discussion of building innovative economy in Russia.

This study was conducted in the Center for Markets in Transition (CEMAT). Founded in 1998 the center represents part of Aalto University School of Economics, former Helsinki School of Economics – the leading oldest business school in Finland. The study was carried out as a part of Creative Compass project (2009-2011) of the Institute for Russia and Eastern Europe. The management for the research work was carried by Prof. Riitta Kosonen and Research Head Dr. Päivi Karhunen. The author of this study is Aleksander Panfilo.

We wish to thank all the experts who were interviewed for this study. We extend our thanks to Anneli Ojala (Institute for Russia and Eastern Europe) for her assistance provided during the research work. In addition the author of the study wishes to thank Prof. Jari Salo (Department of Marketing and Management, Aalto University School of Economics) for his valuable comments throughout the research process.

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Prof. Riitta Kosonen
Director, CEMAT

Abstract

The concept of national innovation system represents a manageable approach to implement innovation policies for governments. Also creative industries have been recognized to posses significant economic potential and have, therefore, became object of public and policy discussions. However, only few attempts have been made so far to place creative industries within the framework of national innovation system. Furthermore, there is a wide research gap in studying the connection of creative industries to innovations within the context of Russia. The aim of this study is to close these research gaps by exploring the role of creative clusters of Moscow in Russian innovation system.

On the basis of literature review a new framework for modeling national innovation system – the Star-model, is developed. The role of creative industries in national innovation system is evaluated by discussing their possible impact on the elements of the Star-model. In empirical part of the study, the Star-model is applied to Russian innovation system and the role of creative clusters of Moscow in Russian innovation system is studied through series of qualitative interviews.

The results of the interviews show that creative clusters of Moscow possess strong linkages to such elements of Russian innovation system as international networks and education and training. Other existing linkages connected clusters with market conditions, creative milieu and innovation cycle. In addition the case study revealed one more linkage, which must be added to the theoretical framework – the linkage to the state.

Key words: national innovation system, creative industries, clusters, Russia, Moscow, creative clusters

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1. Introduction

This study explores the role of creative industries in national innovation system. In the first chapter the topic is introduced along with the aims of the study. Also research questions and key terms are presented. The chapter is concluded with presenting the structure of the study in a profound manner.

1.1. Introducing the Topic

A sustainable competitive advantage is generally considered as a crucial factor in improving economic wellbeing of a country and quality of life of its citizens. Throughout the years diverse strategies have been implemented by countries to achieve sustainable competitive advantage and keep others behind with variable rate of success. A common denominator for those who stay at top seems to be high rate of innovations.

The emphasis on innovations has been identified as a central trend in modern economies, and innovations as well as creativity are already recognized as primary drivers of economic growth, productivity and living standards. In academic community the topic of innovations has been one of the most current during the last decade. For example Marketing Science Institute (MSI), which is one of the most influential organizations in the science of marketing, has been placing research on innovation on their "top research priorities" -list for a number of years now. Many researchers see the role of innovation as crucial in the economic development (e.g. Schumpeter, 1934; Kusiak, 2007). Gopalakrishnan and Damanpur (1997) state that innovation plays role in nurturing the economy, in enhancing and sustaining the high performance of firms, in building industrial competitiveness, in improving the standard of living, and in creating a better quality of life. This statement is accompanied by Hauser et al. (2005) according to whom innovation provides important basis by which world economies

compete in the global marketplace. In defining the importance of innovation Baumol (as cited in Lambooy, 2005) goes even further by stating that "innovation-machine" is the basis of capitalism.

Also on a country level the benefits of innovations haven't remained unnoticed. The subject of innovative economy and national innovation system is especially current for countries with developing economies such as BRIC-countries (Brazil, India, Russia and China). These countries are seeking to overcome raw material dependence and create so-called "innovative economies". The framework of national innovation system represents a manageable approach to implement innovation policies for governments and it has proven its efficiency in a number of countries. According to Feinson (2003) the national innovation system -approach offers a realistic picture of development processes because it views innovation efforts as intimately linked to broader macroeconomic and educational policies.

However, for many decades the concept of innovations was tightly connected to technology and the innovative potential of non-technological fields was neglected. The national innovation system –approach is no exception. Basing their approach on technology-biased definitions of innovation, most of the academics examine national innovation systems through technological lenses (see definitions of: Niosi et al., 1993; Patel and Pavitt, 1994; Metcalfe, 1995; Porter, 1998; OECD, 1999) Thus they leave little, if any, room for non-technological innovations.

The first aim of this study is to break technology –centricity of existing national innovation system -models.

Apart from national innovation system the second pillar of this study is constructed from the concept of creative industries. These industries have been recognized to posses significant economic potential and have, therefore, became object of public and policy discussions throughout the world. Experts agree that creative industries constitute one of the few economic sectors for which a dynamic future development is to be expected (Hölzl, 2006). Furthermore, Potts and Cunningham (2008) argue that creative industries may be considered as economic growth drivers and they may play an even more strategic role in the innovation system as catalysts of variety creation and

facilitators of systemic evolution. However, only few attempts have been made so far to place creative industries within the framework of national innovation system.

The second aim of this study is to establish a clear role for creative industries in a modern national innovation system.

Only few researches have been made about creative industries in Russia (e.g. Gnedovsky, 2005; Goncharik, 2008; Zelentsova and Gladkeeh, 2010) and not a single one of them has explored thoroughly the relation of creative industries to innovation in Russian context. The research gap is obvious as is the lack of information. Existing research shows that creative industries in Russia are lacking state support and they are not seen as part of innovation system. Furthermore, the development of national innovation system in Russia is guided by rather narrow minded, science- and technology biased approach to innovations, which neglects the innovational potential of other fields of economy.

The third aim of this study is to evaluate the current state of Russian innovation system and unveil the innovative potential of Russian creative clusters for decision makers on state and city levels.

1.2. Research Questions

This study focuses on filling a theoretical gap by linking creative industries and clusters with national innovation system. Thus, the main research question can be formulated as follows:

What is the role of creative clusters in national innovation system?

For the purpose of answering the main research question, following sub-questions must be addressed:

- *What is national innovation system?*
- *What is the relation between national innovation system and creative industries?*
- *What is the relation between national innovation system and clusters?*

In order to validate the theoretical framework, the study is taken to the context of Russia providing insights on Russian innovation system, creative clusters and linking them together.

1.3. Key Terms

Innovation: "the creation of new products, processes, knowledge or services by using new or existing scientific or technological knowledge, which provides a degree of novelty either to the developer, the industrial sector, the nation or the world, to succeed in the market place." (Galanakis, 2006)

National innovation system: "the elements and relationships which interact in the production, diffusion and use of new and economically useful knowledge... and are either located within or rooted inside the borders of a nation state." (Lundvall, 1992:2)

Creative industries: "those activities which have their origin in individual creativity, skill and talent and which have the potential for wealth and job creation through the generation and exploitation of expressive value that creates insights, delights and experiences. (modified from DCMS, 1998:3)

Creative cluster: "a geographical concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in the field of creative industries." (modified from Porter, 1998:197)

1.4.   Structure of the Study

This study can be broadly divided into two parts. The first part concentrates on theoretical research in which the concepts of national innovation system (Chapter 2), creative industries (Chapter 3), and clusters (Chapter 4) are elaborated. As an outcome of theoretical part of the study a new theoretical framework for modeling national innovation systems – the Star –model is presented (Chapter 5).

The latter part of the study focuses on applied research where the Star –model is tested within the context of Russia. Russian innovation system is evaluated through the elements of the Star –model (Chapter 6), and the current state of creative clusters in Moscow as well as the role of creative clusters in Russian innovation system are explored on the basis of qualitative interviews (Chapter 8).

The following figure summarizes the structure of this study.

Figure 1: The structure of the study
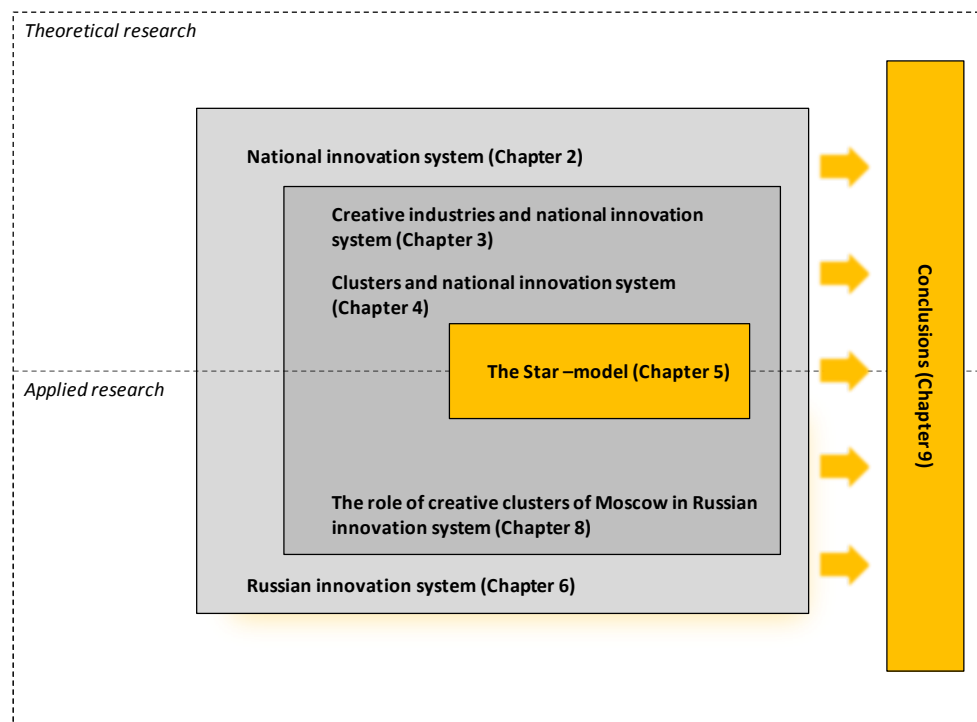
2. National Innovation System

In the first part of this chapter innovation is defined and it is explored as a field of research in marketing science. Nevertheless, the emphasis of the second chapter is made on elaborating the concept of national innovation system. Background, various definitions and boundaries of the term are explored. Furthermore, streams of research and existing models of national innovation systems are presented.

2.1. Innovation

According to Lambooy (2005) the first one to introduce innovation as a concept was Joseph Schumpeter in 1930's. He identified five categories which distinguish innovation. These are new products, new production processes, new markets, new organizations, and new inputs. In relation to research the topic of innovation is considered to be multi-disciplinary. Schumpeter defined innovation as "an iterative process initiated by the perception of a new market and/or new service opportunity for a technology based invention which leads to the development, production, and marketing, all aiming at the commercial success of the invention". (as cited in Kusiak, 2007) Although a lot of different definitions are applied in academic discussion, often a quite narrow and technology oriented definition of innovation is used. Kusiak (2007) even states that some researchers use the term "technology-based innovation" or "technological innovation" to represent the general concept of innovation. This kind of approach to innovation is criticized by Siguaw et al. (2006) who states that a narrow approach to innovation ignores the propensity of an organization to continually innovate as an organizational objective.

During the last decades the concept of innovation has broadened. Partly this is due to the rise of importance of services and intangible products around the world which changed the structure of many economies and made purely technological definition of innovation outdated. More broad definitions of innovation are used for example by

Galanakis (2006:1223) and Lambooy (2005:1142). According to Galanakis innovation is "the creation of new products, processes, knowledge or services by using new or existing scientific or technological knowledge, which provides a degree of novelty either to the developer, the industrial sector, the nation or the world, to succeed in the market place." Lambooy uses even more broad definition: "Innovation is the result of iterative process of interaction between individuals, organizations (e.g. firms or universities), systems, and institutions, using price signals and other signals to find the direction in which to develop. It is the result of both individual actions and the interaction with "environments" such as markets, organizations, systems or institutions. Interestingly Edquist (1997) argues that it was in fact Schumpeter's definition in the first place which was and still is one of the broadest definitions in literature.

After a careful exploration of innovation as a term, it can be concluded that requirements for modern definition of innovation lie in acceptance of a broad view of innovation as well as taking diffusion and commercialization of innovation into account. Keeping that in mind, Galanakis' (2006) definition seems to be the most appropriate to use. Thus, in this research, innovation is defined as follows: "the creation of new products, processes, knowledge or services by using new or existing scientific or technological knowledge, which provides a degree of novelty either to the developer, the industrial sector, the nation or the world, to succeed in the market place."

2.1.1. Research on Innovation in Marketing Science

In marketing science, five innovation related research fields can be identified. These fields are consumer response to innovation, organizations and innovation, market entry strategies, prescriptions for product development, and outcomes from innovation (Hauser et al., 2005). Three especially well researched or most promising subfields can be identified in **consumer response to innovation**. These are consumer innovativeness, models of new product growth, and network externalities. The second field of innovation research in marketing is **organizations and innovation** which focuses more on organizational aspects of innovation. In this research field the influence of the contextual and structural factors on firm's ability to innovate are

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examined. In **strategic market entry** three subfields are mentioned: technological evolution and rivalry, project portfolio management, and strategies for entry. The fourth and fifth fields of innovation research in marketing are **prescriptions for product development** and **outcomes from innovation**. Prescriptions for product development -field is related to the execution part of innovation. In this field market rewards for entry is an important research subfield as well as questions about how incumbents can defend against new entry and how firms must internally reward employees' innovation by metrics-based management. (Hauser et al., 2005) This study can be placed to the field of organizations and innovation as identified by Hauser et al. Furthermore, the focus in this research is made on the subfield of contextual and structural drivers of innovation.

Emphasis on contextual and structural factors is closely related to systemic approach to innovations. According to Lundvall (2007) the innovation process may be seen as an intricate interplay between micro and macro phenomena where macrostructures condition micro-dynamics and vice versa new macro-structures are shaped by micro-processes. OECD (1997) supports the systemic nature of innovation by stating that innovation and technical progress are the result of a complex set of relationships among actors producing, distributing and applying various kinds of knowledge. The innovative performance of a country depends to a large extent on how these actors relate to each other as elements of a collective system of knowledge creation and use as well as the technologies they use. The rise of systemic approaches in the study of innovation is reflected in the national innovation system –approach (OECD, 1997). According to Balzat and Hanusch (2004) the national innovation system –approach analyzes innovative activities in a broader sense: instead of focusing solely on the number of introduced product and process innovations in a country, it encompasses also research and development efforts by business firms and public actors as well as the determinants of innovation like, for instance, learning processes, incentive mechanisms or the availability of skilled labor. Also Edquist (1997) has similar views on the matter. According to him the concept of innovation system is related to the policy of innovation players who influence the ability of firms to innovate which in turn affects the wealth of a whole nation. The national innovation system –approach (NIS) has been set as a theoretical basis for this research and the concept is elaborated next.

2.2.   Background of National Innovation System Theory

The origins of innovation system –approach can be traced to innovation theories and economic theories. Lambooy (2005) considers Lundvall to be the main developer of innovation system –approach. However, Lundvall himself is not keen in taking the full credit for the concept. He argues that the innovation system –approach was developed in parallel at different places in Europe and in the USA in the 1980s. Lundvall gives recognition for coining and shaping the earliest versions of the concept to the collaboration between Christopher Freeman and the IKE Group in Aalborg in the early 1980s. (Lundvall, 2007)

Going deeper into history the links to economic theories can be found. According to Lundvall (2007) national systems of innovation belong to a family of models forming evolutionary economics. Both Lundvall (2007) and Freeman (1995) agree that the first one to introduce the actual idea behind national system of innovation was Friedrich List in 1841, whose conception was "The National System of Political Economy". Freeman (1995) points out that it might just as well have been called The National System of Innovation. List advocated for protection of infant industries as well as broad range of policies designed to accelerate, or to make possible, industrialization and economic growth. These policies were mostly concerned with learning about new technology and applying it. (Freeman, 1995) Balzat and Hanusch (2004) take an economic approach as well and argue that a national innovation system can be perceived as a historically grown subsystem of the national economy in which various organizations and institutions interact and influence each other in the carrying out of innovative activity.

2.3.   Defining National Innovation System

Defining national innovation system can be started by discussing three basic ingredients: national, system and innovation.

Examining innovation on **national** level is justified for following reasons. First of all Freeman (1995) emphasizes the national aspect and argues that states, national economies and national systems of innovation are still essential domains of economic

and political analysis, despite some shifts to upper and nether regions. Freeman further argues that differences in national economic structures, values, cultures, institutions and histories contribute profoundly to competitive success and that the role of the home nation seems to be as strong, or stronger than ever. In addition Sachs et al. (2001) emphasizes the importance of national boundaries by stating that there are strong correlations between poverty and geography. Also Lundvall (2007) defends the use of adjective "national" in the concept of national innovation system by stating that it has become even more important to be explicit about the national dimension as globalization becomes a major theme in the societal discourse.

According to Lundvall (2007) the original choice of "**system**" was based on ideas that "the whole is more than the sum of its parts". In addition Lundvall emphasizes the argument that the innovation process may be seen as an intricate interplay between micro and macro phenomena where macro-structures condition micro-dynamics and vice versa new macro-structures are shaped by micro-processes. He further states that there is a lot of theoretical work to do to model, measure and compare such processes across national borders.

When examining the term **innovation** Lundvall (2007) refers to Schumpeter's definition of innovation according to which innovation can be seen as new combinations and it can be separated from invention that becomes innovation only when the entrepreneur brings it to the market. However, Lundvall also includes not only the event of the first market introduction of the new combination but also the process of its diffusion and use.

There is no single accepted definition of a national system of innovation. However, the important aspect is the web of interaction and it is reflected in nearly all definitions of national innovation system (OECD, 1997). Niosi (2002) has summed up the most important definitions of national innovation system (see appendix 1). In order to avoid the trap of science and technology –bias most of existing definitions can be left out from consideration. From the list provided by Niosi, Lundvall (1992) and Nelson (1993) are the only ones who don't mention technology in their definition of national innovation system. Out of these two definitions Lundvall's definition has the better rate of diffusion. Thus, in this research, national innovation system is: "the elements

and relationships which interact in the production, diffusion and use of new and economically useful knowledge... and are either located within or rooted inside the borders of a nation state." (Lundvall, 1992:2)

2.4.   Boundaries of National Innovation System

Drawing the lines around the complex structure of innovation system can be a difficult task. Lundvall (2007) argues that all firms should be included in the concept as well as activities related both to experience-based learning and activities related to science-based search. But, there is a danger in expanding the concept to the point that it includes virtually all aspects of a country's social, economic, political, and cultural activities. In answering the criticism for the vagueness of the innovation system concept Lundvall (2007) proposes distinction of the core and the wider setting of the system. According to him the core of innovation system consists of firms in interaction with other firms and with the knowledge infrastructure. A wider setting includes "the national education systems, labour markets, financial markets, intellectual property rights, competition in product markets and welfare regimes." (Lundvall, 2007: 102) But not only Lundvall has tried to establish clear boundaries to the term. Johnson and Jacobsson (as cited in Feinson, 2003) emphasize functional boundaries and outline five primary functions of innovation system, which are: to create new knowledge; guide the direction of the search process; supply resources; facilitate the creation of positive external economies (in the form of an exchange of information, knowledge, and visions); and facilitate the formation of markets. Another way to limit the concept is proposed by Liu and White (2001) who identified five fundamental activities of national innovation system as the core of a framework that can be thought of as "nation-specific". These are: research (basic, developmental, engineering); implementation (manufacturing); end-use (customers of the product or process outputs); linkage (bringing together complementary knowledge); and education.

Various approaches to set boundaries around the term of national innovation system have been proposed by academics. However, there is no single right solution. Lundvall (2007) argues that the question about what parts of the economy need to be included in the wider setting of national innovation system has much to do with the purpose of the analysis and with insights about causalities and interdependencies in the

system. Thus, instead of setting absolute boundaries it is more feasible to provide a common structure for studying national innovation systems. Altogether, four primary steps can be outlined in studying national innovation systems. The first step is to analyze what takes place inside firms in terms of innovation and competence building. A second step is analyzing the interaction among firms including competition, cooperation and networking, and how firms interact with knowledge infrastructure. A third step would be to explain international differences in these respects with a reference to the specificities of national education, labor markets, financial markets, welfare regimes and intellectual property regimes. As a fourth step firm organization and network positioning may be used to ''explain'' the specialization, competitiveness and growth performance of the innovation system. Based on these steps one can locate a core in the national innovation system and a wider setting around this core. (Lundvall, 2007)

2.5.   Research on National Innovation Systems

The concept of NIS has been gaining intellectual and practical coherence over a number of decades, enjoying initial strong adoption by OECD and developed countries, and more recently becoming the focus of increased attention as a means to address some of the more profound issues for developing nations (Feinson, 2003). Balzat and Hanusch (2004) identified that the convergence of two conflicting streams can be observed in the research of national innovation systems. The first stream is **the systemic perception of innovation processes** and it puts emphasis on country-specific structures and elements. The second stream focuses on **comparisons across systems** that aim to yield clear-cut advice for national policymakers.

The systemic approach to innovation, which forms a foundation for the first stream, is based on the notion of non-linear and multidisciplinary innovation processes, interaction on the organizational level as well as the interplay between organizations and institutions (Balzat and Hanusch, 2004). According to Balzat and Hanusch three alternatives to the concept of national systems can be identified depending on the chosen level of analysis. The concepts are: regional innovation systems, sectoral innovation systems and technological systems. However, Lundvall (2007) argues that

these approaches must not be seen as alternatives to analysis of national systems, rather they are complementary approaches to innovation system analysis.

As for the second stream, particularly since the late 1990s, several attempts have been made to evaluate and to compare innovation systems in terms of their performance, which in turn is defined and measured in different ways. In many of the latest extensions of the national innovation system concept, international comparisons have been put in the center of attention. In some cases, comparative studies on the system-level have been utilized as a preliminary step to generate rankings of national innovation systems (see e.g. Porter and Stern, 2002). They can be classified in policy-oriented studies and in research-driven advancements of the national innovation system –approach. (Balzat and Hanusch, 2004)

2.6. Existing National Innovation System -models

The distinction into a narrow and broad innovation system is often used among academics as well as practitioners. According to Feinson (2003) a narrow NIS-concept includes the institutions and policies directly involved in scientific and technological innovation, whereas a broad NIS perspective takes into account the social, cultural, and political environment. Similar thoughts are presented by Lambooy (2005) according to whom the narrow NIS is based on a specific knowledge sector of the economy where innovations are generated (universities, R&D-systems, research institutes); whereas the broad NIS involves innovations connected with ordinary economic activities, such as procurement, production and marketing in almost all parts of the economy. The model which combines broad and narrow national innovation systems has been developed by OECD (1999) and it's presented in figure 2.

Figure 2: National innovation system –model (OECD, 1999)
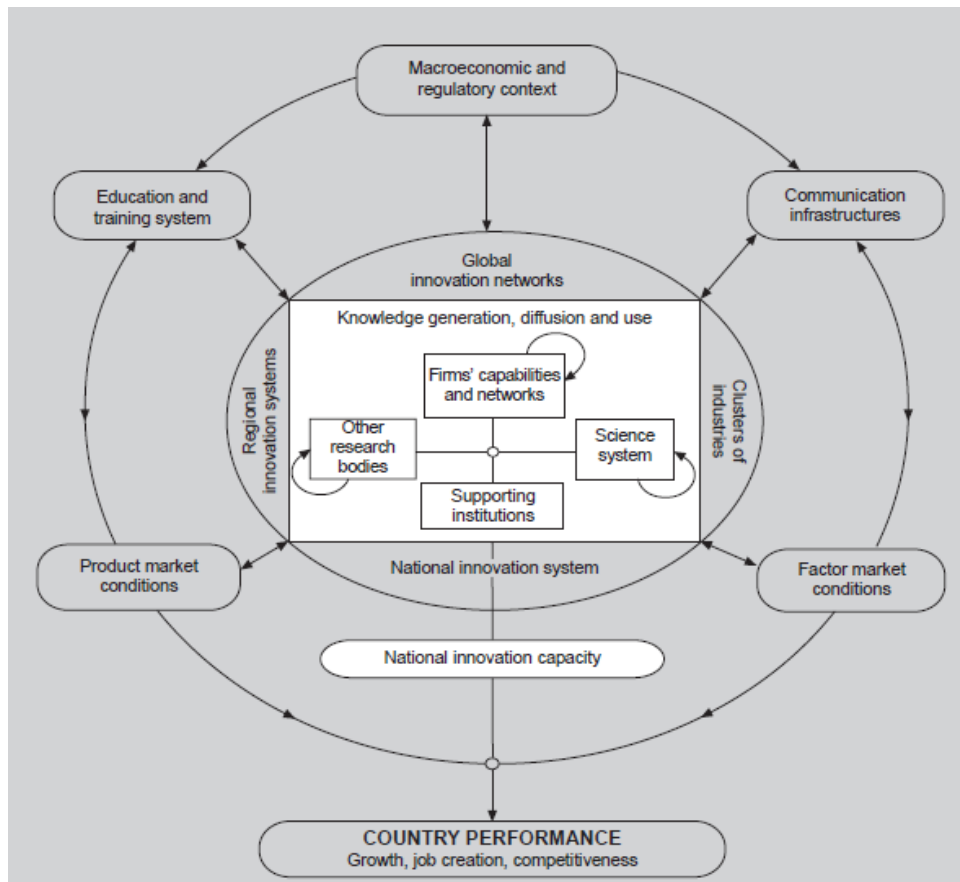
OECD (1999) divides institutions of narrow NIS into five main categories. These are governments that play the key role in setting broad policy directions; bridging institutions, such as research councils and research associations, which act as intermediaries between governments and the performers of research; private enterprises and the research institutes they finance; universities and related institutions that provide key knowledge and skills; and other public and private organizations, such as public laboratories, joint research institutes and patent offices that play a role in the national innovation system.

In addition to these components OECD's broad NIS includes all economic, political and other social institutions affecting learning, searching and exploring activities, e.g. a nation's financial system; its monetary policies; the internal organization of private firms; the pre-university educational system; labor markets; and regulatory policies and institutions (Feinson, 2003).

Porter (1998) provides another way to analyze national innovation system through his Diamond model. Porter observes the national innovation system from the point of view of competitiveness and sees the elements of the Diamond model as determinants of competitive advantage on national level. The elements of Diamond model are: factor inputs which include tangible assets such as physical infrastructure, information, the legal system, and university research institutes that firms draw upon in competition; the context for firm strategy and rivalry, which refers to the rules, incentives, and norms governing the type of intensity of local rivalry; demand conditions, which describes the nature of home demand for the industry's product or service; and related and supporting industries, which constitute of clusters themselves and illustrate the presence or absence of supplier industries and related industries.

In addition to these elements Porter has two supplementary variables which can influence the national innovation system. These elements are chance and government. Chance events are developments outside the control of the firm, such as pure inventions, breakthroughs in basic technologies, wars, external political developments and major shifts in foreign market demand. The role of government in the model is either to improve or detract from the national advantage. Porter (1990) provides some examples of how government policies influence model's determinants. Antitrust policy affects rivalry, regulation can alter home demand conditions, and investments in education can change factor conditions. Porter further adds that policies implemented without consideration of how they influence the entire system of determinants are as likely to undermine national advantage as enhance it. The Diamond model is presented in figure 3.

Figure 3: The Diamond –model (Porter, 1998)
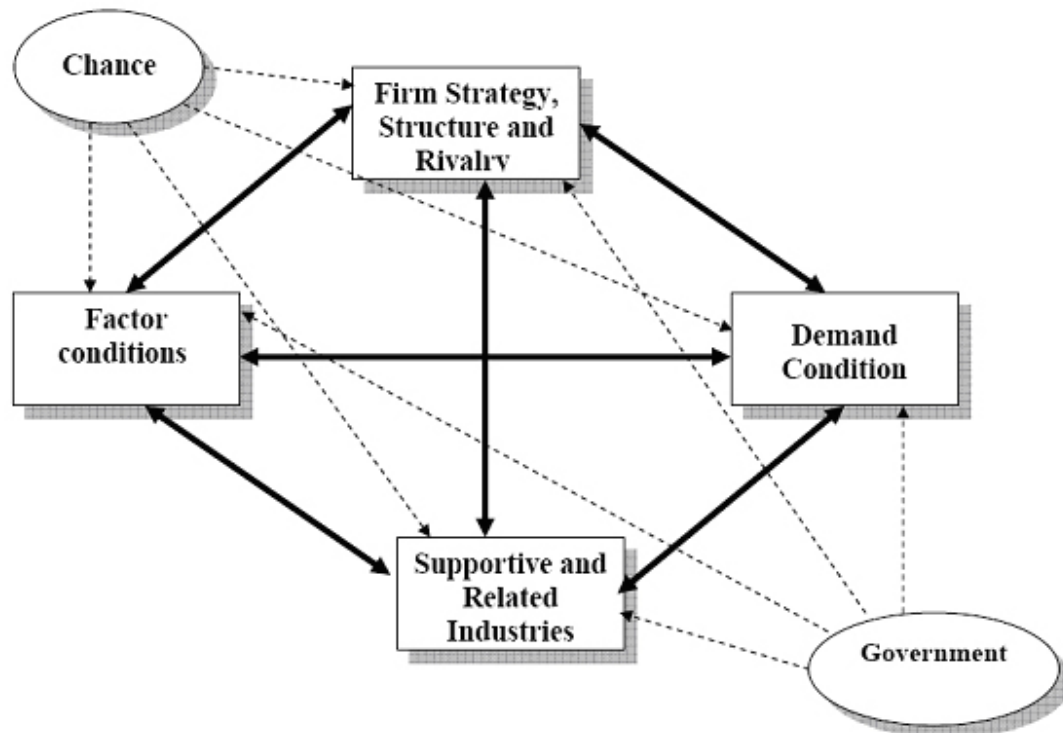
Porter's model can be considered as one of the key models of national competitiveness. Most models designed for this purpose represent subsets of Porter's comprehensive model (Moon et al., 1998). However, Moon et al. (1998) criticize Porter's Diamond model for failing to incorporate the effects of multinational activities. This issue has been addressed by the Double Diamond model developed by Rugman and D'Cruz (1993). The Double Diamond has been further modified into a Generalized Double Diamond model developed by Moon et al. (1998). The Generalized Double Diamond model is composed of a domestic diamond and an international diamond. The domestic diamond of the model assesses the extent to which a country enhances competitiveness by utilizing its domestic resources, whereas the international diamond evaluates the extent to which the country enhances its competitiveness by aggregating all of the non-domestic diamonds (Moon et al., 1998). International dimension of the Generalized Double Diamond model make it better integrated within the context of global economy. The model also includes the state not as an exogenous parameter, but as an important variable which influences the four determinants of the diamond model.

2.6.1. National Innovation System -models for Transition Economies

A relatively recent phenomenon has been the adoption of the innovation system approach to developing countries (Fagerberg and Srholec, 2008). However, there are still significant gaps in this field of research. Liu and White (2001) criticize the early research on national innovation systems for focusing on basically similar countries. Especially in the early phases of research on national innovation systems developing economies were getting a relatively low amount of attention. Although the attention has been gradually switching towards developing economies and their innovation systems, the existing models of national innovation systems are lagging behind. According to Bakovic (2010) one of the solutions transition economies tried to employ in developing innovation systems, was pure copying of developed countries innovation models and incentives. However, this approach was criticized by many and did not result in significant improvements in the short term (Bakovic, 2010). Nevertheless, also other theoretical efforts in this direction have been made.

Liu and White (2001) offer a system-level approach in evaluating national innovation systems. According to them this approach is suitable to examine national innovation systems in transition economies. Liu and White (2001) divide their theoretical framework into five fundamental activities which are research (basic, developmental, engineering), implementation (manufacturing), end-use (customers of the product or process outputs), linkage (bringing together complementary knowledge) and education. As for actors of national innovation system, they focus on more generic set of terms. Instead of discussing the role of innovation system actors such as research institutes or universities they use primary actors, secondary actors and institutions to distinguish among elements of an innovation system based on their relationship with the five fundamental activities and system structure and dynamics. According to the authors this approach is better suited for comparison of innovation systems across various types of countries. (Liu and White, 2001)

Also Radosevic (1999) provides his own view on national innovation systems by focusing on emergent economies of Central and Eastern Europe. He argues that the transformation from socialist science and technology system to modern innovation system can be seen as a functional recombination or reconfiguration between enterprises and innovation infrastructure, and between foreign and domestic

enterprises. Radosevic (1999) sees enterprises as the main actors in shaping innovation systems in transition economies. Being the central actor of systems of innovations the activities of enterprises are shaped by national, sectoral and regional factors. Furthermore, Radosevic emphasizes the meaning of framework conditions concerning privatization, finance, legal protection, and communication infrastructure. According to him these elements strongly influence innovation activities of enterprises and they have a crucial role for innovative activities during the transition period. Thus, the model proposed by Radosevic ties the emergence of innovation systems with mutual interaction between micro-, sectoral-, national- and regional-specific factors and determinants. He further argues that the emergent systems of innovation are shaped through the interaction of all four levels. (Radosevic, 1999)

All of the described national innovation system models have been widely applied in a number of countries. However, also limitations of these models must be addressed. Firstly, OECD's model is designed around technology-centric innovation approach and as a result it neglects the innovative potential of non-technological fields. Secondly, Porter's Diamond model, as well as its later modifications, approach *competitiveness* on national level. Yet, the focus of this research is on national innovation systems. Although innovations have been widely acknowledged as primary drivers of economic growth, productivity and living standards, they still might not be the only source of competitive advantage of nations. Thus, for the purpose of this research using models designed for evaluating competitiveness of nations would mean making too many generalizations. In terms of modeling national innovation system in transition economies the model of Liu and White (2001) as well as the model of Radosevic (1999) partly fill the gap existing in research on national innovation systems in transition economies. Moreover, both of these models are very well suited for comparison of innovation systems of various types of countries. However, these models may over-generalize the concept of national innovation system and therefore they are not able to provide a comprehensive theoretical framework for an in-depth analysis of national innovation system and its actors in a single country. Based on this discussion, none of the described national innovation system –models can be applied directly for an in-depth analysis of Russian national innovation system.

3. Creative Industries and National Innovation System

In the third chapter the term of creative industries is introduced and defined in a profound manner. In addition, the relation of creative industries with innovations is discussed.

3.1. Background of Creative Industries

Pratt (2007) gives a brief overview of development of the concept of creative industries. According to him the term culture industries was first introduced by German writers Adorno and Horkheimer in 1930s. Pratt ties the emergence of term creative industries to UK where the centrist "New Labour" party elevated cultural industries as a national policy and 1997 in UK and introduced the term of creative industries thereby linking them to "knowledge economy". The first document that sought to measure the economic impact of the creative industries was prepared by UK's Department for Culture, Media and Sport in 1998 (see DCMS, 1998) and it had a huge impact spawning a number of similar reports around the world (Pratt, 2007).

However, despite the fact that the creative industries have become of increased interest in both academic and policy circles over the past 20 years, there are currently only few theoretical or policy models available. Even the term of creative industries is somewhat debatable. For example, the distinction between creative industries and cultural industries is up to date unclear and in many cases overlapping. The terminology varies from country to country and even within the countries from region to region (Hölzl, 2006). Also Galloway and Dunlop (2007) agree by stating that the terminology currently used in creative industries policy lacks rigor and is frequently inconsistent and confusing. They add that the terms "cultural industries" and "creative industries" are often used interchangeably; there is little clarity about these terms and

little appreciation or official explanation of the difference between the two. They further suggest that there must be a strong theoretical basis for any definition used for public policy purposes because this has important consequences for how we measure these industries, and the type of interventions we adopt. Thus, in order to ensure consistency of this research a proper definition and clarification of creative industries as a term is needed. Next two sections are aimed to establish a clear picture of creative industries by defining the term and setting boundaries to it.

3.2.   Defining Creative Industries

There are many definitions of creative industries available. For example Caves (2000: 1) defines creative industries as follows: "creative industries supply goods and services that we broadly associate with cultural, artistic, or simply entertainment value. They include book and magazine publishing, the visual arts (painting and sculpture), the performing arts (theatre, opera, concerts, dance), sound recordings, cinema and TV films, even fashion and toys and game." Though, probably the most notable and influential definition of creative industries was made by UK's Department of Culture, Media and Sport (DCMS) in 1998. According to their definition creative industries are "those activities which have their origin in individual creativity, skill and talent and which have the potential for wealth and job creation through the generation and exploitation of intellectual property" (DCMS, 1998:3). Altogether, DCMS includes 13 different fields under the umbrella of creative industries. These fields are advertising, architecture, arts and antique markets, crafts, design, designer fashion, film, interactive leisure software, music, television and radio, performing arts, publishing, and software (DCMS, 2007).

However, definition by DCMS is questioned by many. For example Howkins (2002) argues that the term "creative industry" should apply to any industry where "brain power is preponderant and where the outcome is intellectual property" and therefore the boundaries of official DCMS definition should be extended to include both business and scientific creativity. Also Pratt (2007) criticizes the whole concept of creative industries by stating that all industries are creative and therefore the use of term creative industries is questionable. Galloway and Dunlop (2007) agree by stating that any innovation in any industry is creative and therefore any industry is potentially

creative. They also criticize the fact that the definition of creative industries used by DCMS is based on concepts of creativity and intellectual property. According to them defining creative industries with the help of intellectual property rights is problematic since many types of creative activity, including science, engineering and academia, generate intellectual property and defining cultural sector by its ability to generate intellectual property is too wide-ranging, since it fails to identify adequately the distinctive aspects of the cultural sector.

In response to the critique DCMS (2007) argues that the definition is based on a core business model which is in common to all creative industries. The heart of the business model is generating copyrightable acts of origination of expressive value. All creative industries commercialize expressive value, which creates insights, delights and experiences.[1] In comparison to other sectors of knowledge economy, the commercial turnover of creative industries is attributable to acts of genuine "creative origination" and business model of the creative industries depends significantly on their capacity to copyright expressive value (DCMS, 2007).

As with the definition itself, there are many approaches in including different fields under the umbrella of creative industries. According to Hölzl (2006) due to the fact that public discussion on creative industries started in UK, many other European countries oriented themselves on this definition when taking up analysis on their own creative industries. Hölzl (2006) further provides a table with an overview on the different definition approaches of creative (or cultural) industries in Europe (see appendices).

Despite the fact that there is no established definition for creative industries and the term is still debatable, the definition by DCMS seems to be the most advanced due to its wide diffusion and influence and can be taken as a basis for definition of creative industries in this research. However, as Galloway and Dunlop (2007) argue, the definition based on intellectual property is too wide-ranging and doesn't identify distinctive aspects of creative sector. This problem can be solved by substituting the notion of intellectual property used in DCMS's definition by expressive value. Therefore, in this research, the creative industries are: those activities which have their

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[1] Expressive value can be further divided into six dimensions which are aesthetic value, spiritual value, social value, historical value, symbolic value, and authenticity value (Thorsby, 2001)

origin in individual creativity, skill and talent and which have the potential for wealth and job creation through the generation and exploitation of *expressive value that creates insights, delights and experiences*. Following the definition of DCMS the fields to include under umbrella of creative industries are advertising, architecture, arts and antique markets, crafts, design, designer fashion, film, interactive leisure software, music, television and radio, performing arts, publishing, and software.

3.3.   Boundaries of Creative Industries

There are some features of creative industries which distinguish them from other businesses. According to Bagwell (2008) creative industries are characterized by a high degree of individual skill and commitment and frequently place cultural and creative objectives above potential commercial returns. They are also often characterized by flexible organizational arrangements, with temporary, project-based teams rather than a permanent workforce. Furthermore, SMEs tend to feature more prominently in the creative industries than in most other sectors of the economy (DCMS 2006). In a broader sense the hallmarks of creative industries are strong growth, intense innovation and creativity, and focus on the demands of consumer (DCMS, 2007). Caves (2000) provides an analysis of distinctive features of creative industries which are summarized in table one.

Table 1: Distinctive features of creative industries (Caves, 2000)

Considerable uncertainty about the likely demand for creative product, due to the fact that creative products are 'experience goods', where buyers lack information prior to consumption, and where the satisfaction derived is largely subjective and intangible
The ways in which creative producers derive non-economic forms of satisfaction from their work and creative activity, but are reliant upon the performance of more 'humdrum' activities (e.g. basic accounting and product marketing) in order for such activities to be economically viable
The frequently collective nature of creative production, and the need to develop and maintain creative teams with diverse skills, who often also possess diverse interests and expectations about the final product
The almost infinite variety of creative products available, both within particular formats (e.g. videos at a rental store), and between formats
Vertically differentiated skills ('A list'/ 'B list' phenomenon) and the ways in which producers or other content aggregators rank and assess creative personnel
The need to coordinate diverse creative activities within a relatively short and often finite time frame
The durability of many cultural products, and the capacity of their producers to continue to extract economic rents (e.g. copyright payments) long after the period of production.

Creative industries also face many distinctive challenges. The value of the outputs of the creative industries to individual consumers is only known after they have been consumed or experienced. Also cost issues raise risks for creative industries because the costs of producing a creative good have to be irretrievably incurred before any kind of market information can be gathered about whether it will succeed. In terms of knowledge creation, as such, knowledge within the creative industries tends to be even more tacit than in the knowledge economy in general. The creation process is largely up to individuals, teams, networks and organizations. If the teams are broken up in any way, the creative knowledge they generate can quickly be dissipated. (DCMS, 2007)

But not only distinctive features to other sectors of economy matter. In order to clarify picture of creative industries a well-established distinction between creative and cultural industries must be made, since these terms are somewhat overlapping and often used interchangeably. In most people's eyes, the cultural industries and the creative industries are basically the same thing (Galloway and Dunlop, 2007).

However, separating these two terms is important since it has implications for theory, industry and policy analysis (Cunningham, 2002).

Using the term creative instead of cultural is significant especially within a knowledge economy context. Whereas originally the cultural industries were incorporated into cultural policy, the new policy stance has subsumed culture within a creative industries agenda of economic policy. The absorption of cultural industries within the wider creative industries agenda is related to increased interest for knowledge economy. (Galloway and Dunlop, 2007)

A useful mapping which separates cultural and creative industries and places creative activities within the context of the whole economy is provided by DCMS (2007). This mapping is presented in figure 4.

Figure 4: Creative industries within the economy (DCMS, 2007)
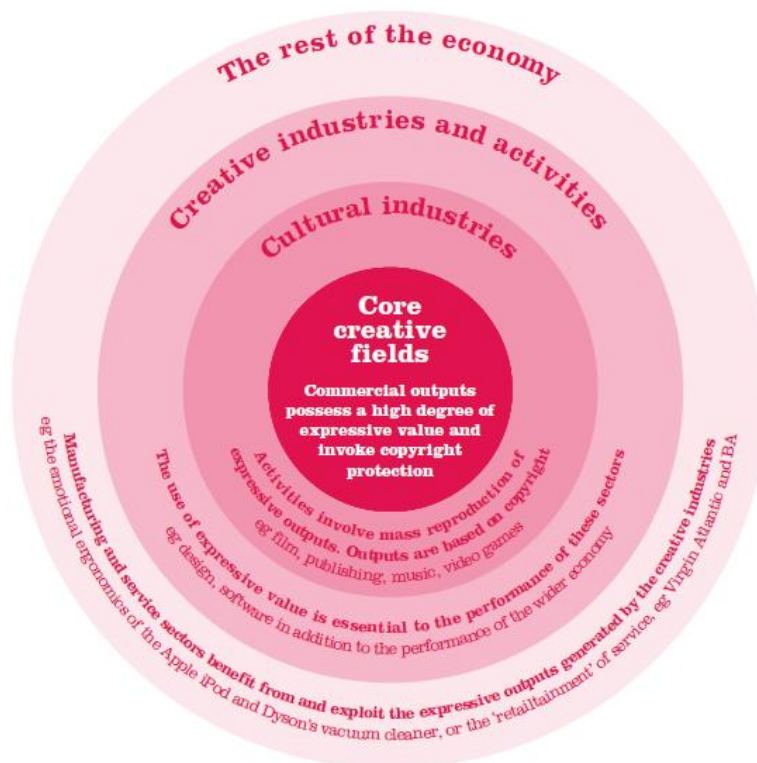
The core creative activities are placed to the centre. This "bull's-eye" represents where pure creative content is generated. In terms of industries, the "bull's eye" includes the performing arts, arts and antiques and crafts as well as pure content creation of any of the creative industries. The cultural industries which are located in the circle beyond represent those industries that focus on the commercialization of pure expressive value. Adapting the definition of creative industries used in this research, cultural industries can be defined as those activities which have their origin in individual creativity, skill and talent and which have the potential for wealth and job creation *solely* through the generation and exploitation of expressive value. The next circle, creative industries, combines both expressive and functional values. Both creative and cultural industries produce a high degree of expressive value. However, the production of creative industries has also high functional value. Architecture, design, fashion, computer services and advertising are quintessentially creative industries whose market offerings pass both a cultural and workability test. In addition, creative industries are an important bridge to the wider economy. A growing number of designers, advertisers and software writers work not just within firms situated in the creative industries, but beyond.

3.4.   Placing Creative Industries within Innovation

The question about the place of creative arts, design, media and communications within contemporary innovation was first raised in late 1990s. It is not surprising that creative industries seek place in the framework of innovation since the degree of public support to be gained is potentially greater than that achieved through cultural and social policy channels. Also the fact that innovation policy reaches more and more actors across many areas of public policy including culture, education, research and development, commerce, social development and heritage speaks in favor of including creative industries in innovation discussion. (Jaaniste, 2009) According Cunningham et al. (2003) creative industries fuel the creative capital and creative workers which are increasingly being recognized as key drivers within national innovation systems.

Jaaniste (2009) gives a brief overview of the history of bridging creative industries with innovation policy. According to him these efforts can be grouped into two major phases that sit alongside the emergence of overt innovation policy in the 1990s and its

growth in the 2000s. These phases are proto-discourse which arose in mid 1990's and early discourse which can be placed around the turn of the millennium. After the shift of the millennium, creative industries started to address innovation policy more directly. Jaaniste mentions several authors who initiated and contributed to this process such as Harris (1999) Caves (2000), Howkins (2001, 2002) and Mitchell et al. (2003).

Jaaniste is also behind one of the most recent attempts to place creative sector within innovation. In his article Jaaniste (2009) differentiated four possible places for creative industries in relation to innovation system which he named as "outside the innovation cycle", "attached to science and technology –based innovation cycle", "at various points within creative sector innovation cycle", and as "a creative sector innovation system". When creative sector is placed **outside the innovation cycle** it is considered to be either not included into innovation system or it is responsible of the creation of creative culture by providing climate for creativity and creative skills for would-be innovators throughout all domains and sectors. If the creative sector is **attached to science and technology –based innovation cycle** it can contribute to innovation by redeploying creative professionals and their creative skills to other sectors of economies. Creative sector can also play important role in marketing and diffusing science and technology –based innovations, goals and activities and add aesthetic qualities for products to differentiate them from competitors and make them attractive to consumers. It can also make creative content for innovative ICT applications. If the traditional science and technology –based view on innovation is expanded, creative sector can also be seen as **producer of innovations** in itself acting as knowledge creator, producing new concepts, methods and material outputs. Creative sector can also be considered as a **separate innovation system**. This argument can be found in Cutler et al. (2003) who examined organizations(creative firms, universities and training, research centres, industry bodies, cultural agencies and customers and users), assets (technologies, intellectual property, skills, finances and network infrastructure), regulatory regimes, and their interrelations.

Apart from Jaaniste's differentiation also Potts (2007) has provided his own view on the matter. He puts creative sector across three stages of innovation cycle – knowledge production, knowledge application and knowledge diffusion. Potts places experimental fine arts within the stage of experimental research and commercial creative industries to practical application. He also argues that knowledge diffusion for all the innovation

economy might somehow be facilitated through cultural production and consumption. Potts sees the creative sector not only providing cultural goods and services but also contributing to economic and social evolution, acting as 'experiments in growth' and 'forces for change'.

Potts (2007) and especially Jaaniste (2009) provide a solid foundation for linking creative industries with innovations by examining the interrelationship between these two concepts. However they don't provide a theoretical framework for connecting creative industries with the innovation system on a national level. Thus, the research gap in placing creative industries within the context of national innovation system is still present.

4. Clusters and National Innovation System

In this chapter concepts of clusters and creative clusters are elaborated. Additionally, the connection between clusters and innovations is assessed.

4.1. Background

According to Porter (1998) clusters represent a new and complementary way of dividing and understanding an economy, organizing economic development thinking and practice, and setting public policy. He sees clusters as important contributor to competition which in turn is considered to be crucial for economic development. He further adds that instead of targeting, all existing and emerging clusters deserve attention and all clusters can offer the potential to contribute to prosperity for the economy as a whole.

OECD (1999) notes, that clusters represent a manageable system for governments to implement the national innovation system. In this respect, cluster analysis is one of the core elements of the work on innovation policies. In general, there is no universal approach in cluster analysis or cluster-based policy, but three levels of analysis of clusters can be identified. These are micro-level analysis which focuses on inter-firm linkages, industry/meso-level analysis on inter- and intra-industry linkages in a production chain, and macro-level analysis on how industry groups constitute a broader economic structure. There is also a great diversity of innovation practices between different clusters. Some clusters are closely linked to the science system and their innovation depends heavily on scientific discovery (pharmaceuticals, semiconductors and biotechnology, for instance). Others act as intermediaries between science and other clusters (*e.g.* information technology), and still others are quite independent of the science system (*e.g.* mechanical engineering). This diversity

indicates the need for a variety of approaches to analysis and policy. (OECD, 1999) Despite the many unresolved questions concerning the accurate definition of clusters and the most effective ways to design and execute cluster approaches to innovation policy, cluster based policies remain very popular (OECD, 2008).

4.2. Defining Clusters

OECD (1999:56) defines clusters as follows: "Clusters are networks of interdependent firms, knowledge-producing institutions (universities, research institutes, technology-providing firms), bridging institutions (*e.g.* providers of technical or consultancy services) and customers, linked in a production chain which creates added value." A more simplified definition is provided by Porter (1998). He defines cluster as a system of interconnected firms and institutions the whole of which is greater than the sum of the parts. Porter also gives a more specific definition of a cluster. According to him clusters are "geographical concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate" (Porter, 1998:197). The latter definition is used also in this research.

Despite Porter's detailed definition of a cluster it is rather difficult to draw clear boarders around a cluster. Porter (1998) himself criticizes aligning clusters in broad groupings, such as manufacturing, consumer goods, or high tech. According to him, discussions about cluster constraints and bottlenecks in such groupings fall into generalities. On the other hand also labeling a single industry as a cluster overlooks crucial cross-industry and institutional interconnections that strongly affect competitiveness. Porter admits that drawing cluster boarders is often a matter of degree. According to him the strength of linkages, their importance to productivity and innovation determine the ultimate boundaries of a cluster. In other words cluster boundaries should encompass all firms, industries, and institutions with strong linkages, whether vertical, horizontal, or institutional; those with weak or non-existent linkages can be safely left out.

## 4.3.	Creative Clusters

Creative industries and clusters have already been defined in this research as separate terms. Being a combination of these two a creative cluster is defined in this research as: a geographical concentration of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in the field of creative industries.

According to Davis et al. (2009) the cluster approach is feasible for creative industries because it is consistent with the literature that investigates clusters in many other industries and sectors. The key characteristics of clusters remain unchanged despite the industry. These key characteristics are numerous linkages among geographically proximate firms and institutions, especially suppliers, business services, research institutions, and educational institutions (Davis et al. 2009). Also Bagwell (2008) agrees that the advantages of clustering such as increased competitiveness, higher productivity, new firm formation, growth, profitability, job growth and innovation are applicable to creative clusters as well as for other business clusters. The result of these advantages has been that policy makers around the globe have supported clusters as an economic development strategy for various industries and creative industries are no exception. Creative cluster development is now central to the economic strategies of regional development agencies across many regions of the world (Bagwell, 2008).

As for main differences, Davis et al. (2009) argue that creative clusters are much more deeply embedded in the social environment and political economy both at the local and national levels, than technology clusters. Davis et al. (2009) further add that this exposes creative cluster performance to influences from a much broader social and policy environment than innovation policymakers are accustomed to dealing with. For example Flew (2002) argues that creative personnel, and those establishing SMEs and micro-businesses, seek not only work opportunities, bandwidth and venture capital, but also a creative milieu in which to establish these enterprises, that generates pleasure, enthusiasm and networking opportunities with other creative people. In addition, the fact that creative clusters cut across many different economic sectors has been identified both as strength and weakness – a strength because it implies new inter-

sector connections and potential innovations; a weakness because lack of coherence makes it difficult to focus policy or measure economic value (Evans, 2009).

In spite of some differences in clustering of creative sector compared with other industries the key characteristics of clustering remain the same. Thus, it is feasible to examine the benefits of clustering to innovations as a whole without any sector distinction.

4.4.   Placing Clusters within Innovation

There are several benefits in cluster approach. Roelandt and Den Hertog (1999) list some of them. Firstly, cluster-approach offers a new way of thinking about the economy and helps to overcome the limitations of traditional sector-based analysis. Secondly, cluster-approach captures important linkages in terms of technology, skills, information, marketing and customer needs, which are increasingly regarded as fundamental to competition and to the direction and pace of innovation. This thought was presented also by Porter (1998) who stated that cluster-approach captures more fully important linkages, complementarities, and spillovers of technology, skills, information, marketing, and customer needs that cut across firms and industries. Porter further stated that such connections are fundamental to competition, to productivity, and, especially, to the direction and pace of new business formation and innovation. A third benefit of cluster-approach according to Roelandt and Den Hertog (1999) is that it provides ways to redefine the role of the private and public sector and that of other institutions and can provide a starting point for a constructive business-government dialogue. In addition clustering promotes new business formation in related sectors, through distinctive access to necessary labor, skills, knowledge, technology and capital (Flew, 2002).

When it comes to innovations in particular, Porter (1998) argues that cluster participation offer advantages in perceiving new technological, operating and delivery possibilities. Participants learn early and consistently about evolving technology, component and machinery availability, as well as service and marketing concepts. These linkages are facilitated by ongoing relationships with other cluster entities, the ease of site visits, and frequent face-to-face contact. Porter further adds that firms

within clusters are more flexible and can act more rapidly in terms of innovations since the new components, services, machinery, and other elements needed to implement innovations are accessed more easily within the cluster. Porter is accompanied by Flew (2002) who states that clustering enhances innovation because firms are aware more quickly of new opportunities, as well as they can respond more rapidly and flexibly to these them.

Being one of the key elements in modern innovation policies, clusters must be emphasized in modeling national innovation system. However, none of the models discussed in this study is able to capture the whole aspect of benefits of clustering. This suggests that further modifications for national innovation system –models are needed.

So far in this study the concept of national innovation system has been elaborated, the key models of national innovation systems have been described and creative industries as well as clusters have been theoretically linked to innovations. The literature review has shown that none of the described national innovation system –models can be directly applied to the context of Russia. The existing models fall into the trap of technology biased definition of innovation which makes their approach rather limited. Apart from technology bias, most of the models make too many generalizations and do not provide a well suited framework for comprehensive analysis of a national innovation system. Furthermore none of the models discussed in this study is able to capture the whole aspect of benefits of clustering. To address all of these issues a modification of existing national innovation system –models is needed.

Additionally, there still exists a research gap in placing creative industries within the context of national innovation system. For addressing this research gap creative industries must be linked to innovation system on a national level.
A possible solution for tackling the criticism presented above is offered in the next chapter. First part of the fifth chapter presents a new theoretical framework for national innovation systems. In the second part of the chapter the research gap in connecting creative industries with innovation system on a national level is addressed by establishing possible linkages of creative clusters to the elements of national innovation system.

5. The Star -model

In the fifth chapter a new theoretical framework for modeling national innovation system is presented. Being the most influential models in the field of national innovation systems, OECD's model and Diamond model with its later modifications serve as a basis for the new theoretical framework. In the latter part of the chapter the role of creative industries in the new national innovation system –model is explored through linkages of creative clusters to the elements of national innovation system.

5.1.   A New Theoretical Framework

Figure 5: The Star –model
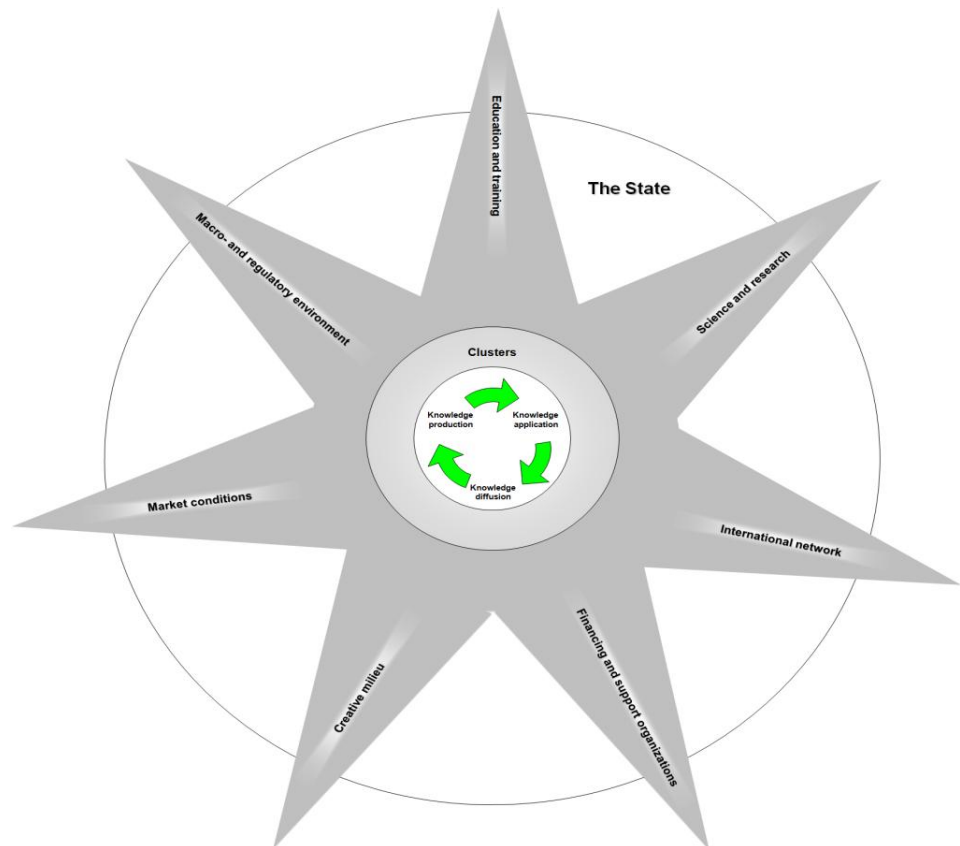
After an extensive discussion about national innovation system, creative industries and clusters it is now time to present a new theoretical framework for modeling national innovation system. There are four key features which distinguish the Star -model from previous models of national innovation system. First of all, clusters are given a central role in this model. In addition, by using a definition of innovation which does not overstress technology the new model takes into account the innovation potential of non-technological sectors. Furthermore there is no distinction between narrow and broad systems of innovation in the Star –model. Also the role of the state is emphasized. Next, the distinctive features and the elements of the Star -model are presented in a thorough manner.

5.1.1. *Distinctive Features of the Star –model*

The most distinctive feature of the Star -model is the central role of clusters. The reasons for lifting clusters to the spotlight are clear. According to Porter (1998) clusters represent a new and complementary way of dividing and understanding an economy, organizing economic development thinking and practice, and setting public policy. Also OECD (1997) points out that cluster approach seems to be increasingly popular among innovation system theorists and countries developing innovation policies. There are numerous advantages of cluster approach to innovations. Just for recap a few, benefits of cluster approach consist of overcoming limitations of traditional sector-based analysis and capturing more fully important linkages both inside the cluster and inside the whole innovation system. Clusters also emphasize cooperation, ease the access for the firms to specialized inputs and promote new business formation in related sectors. All these reasons speak for giving clusters more attention in modeling national innovation system.

In addition to raising clusters to the spotlight also other modifications are necessary for the model to be better suited for modern economy. To make the new model take all aspects of economy into account it is very important to avoid the trap of overstressing science and technology. Especially OECD fails to do so by designing its national innovation system –model around a narrow innovation approach, thus neglecting the high innovation potential of other industries, such as creative industries for example. In

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order to avoid the bias towards science and technology a broader definition of innovation must be used when designing the national innovation system –model.

As it was described earlier OECD's model separates a narrow innovation system from a broad one. The Star –model uses a different approach. Here the core of the model consists of innovation cycle and clusters surrounding the innovation cycle. An interrelationship between the core and the rest of the elements included in the model is dependent on boundaries of a cluster. However, drawing cluster boarders is often the matter of degree. Different links are important to different industries and clusters vary in size, breadth and state of development. Some clusters' innovations depend highly on linkages to science system (e.g. biotechnology) and some are quite independent of it (e.g. many non-tech sectors). These are the reasons why an unambiguous boundary cannot be drawn between clusters and the rest of national innovation system. Ultimately, the strength of linkages and their importance to productivity and innovation determine the boundaries of a cluster (Porter, 1998). Thus, drawing boarders between the core of the Star –model and the rest of included elements is possible only in case of a single cluster but this approach cannot be generalized to the model as a whole. Due to these arguments there is no distinction to a narrow and a broad innovation system in the Star –model.

Also the role of the state is emphasized in influencing the national innovation system. This feature makes the new model more suitable for countries in the process of transition to knowledge/creative economy and/or countries where the state has a traditionally strong role in the society. Examples of such countries are Russia and China.

These distinctive features alter the very core of national innovation system and they have a significant impact on deciding which key elements to include in the national innovation system –model. The elements of the Star –model are presented next.

5.1.2. The Elements of the Star –model

The core of the Star –model is innovation cycle surrounded by clusters. The original concept of innovation cycle was developed by OECD. The innovation cycle includes knowledge production – creating and producing knowledge, knowledge application – applying new knowledge to practical solutions in commercial and social terms, and knowledge diffusion – the spread of new knowledge applications across the economy and society until it is absorbed into our evolving way of life (Cutler & Company 2008). Including clusters in the core of the model allows examining innovations on a broader level. Instead of focusing on innovations inside specific company or organization, also joint innovations of different companies as well as development of cross sector innovations are taken into account. The latter argument is especially viable for such clusters which combine different industries.

The rest of the Star –model consists of seven different elements of national innovation system and the state which is given the role of a background actor for the whole national innovation system. The seven elements completing national innovation system are: market conditions, macro- and regulatory environment, education and training, science and research, international network, financing and support organizations, and creative milieu. The state is given separate attention due to its potentially significant influence on every element of national innovation system.

All of these elements can be found in either OECD's model or in Porter's Diamond-model and its later modifications. However, the element are regrouped and their role is revised according to the basic distinctive features of the Star –model. Several pieces of Porter's competitive view on innovation system are regrouped under one notion of **market conditions**. The Star –model's market conditions include demand, competition, suppliers and partners for actors inside the cluster and for cluster as a whole. Parts of Porter's "factor conditions" and elements of OECD's broad innovation system are grouped under **macro- and regulatory environment**. Here macro- and regulatory environment consists of country's macro-economic factors and rules, incentives and norms that guide the operations of cluster actors and cluster as a whole.

Some of the elements are taken directly from OECD's model, though their role has been revised due to lack of distinction to narrow and broad innovation systems in the

Star -model. These elements are **science and research** (science system in OECD's model) and **education and training** (education and training system in OECD's model). Depending on the quality of education and training the clusters are more or less provided with qualified and competent personnel, which in turn either promotes or slows down the rate of innovation. In addition to education and training, science and research is the other foundation pillar for successful innovating. Especially in highly technological fields the role of science and research is crucial for innovations.

The significant modification of the Diamond model was international dimension added by the Double Diamond and the Dual Double Diamond -models. The international dimension in the Star model is represented by **international networks** –element. International networks seem to be a necessity in modern globalized economy. It's hard to imagine that a national innovation system would be able to stay competitive without having international linkages. Global knowledge and technology exchange is required for national innovation systems to stay up to date in global development.

Next element to be described is **financing and support organizations** which include all financing, supporting and bridging organizations as well as other public or private organizations that play role in national innovation system. Adapting the classification of OECD also research councils and associations, public laboratories and patent offices can be included here. The organizations of cultural heritage such as museums, and cultural collection institutes are also included in support organizations since they are as Jaaniste (2009: 222) states "valuable repositories of knowledge and social memory of innovators". In addition, financing is emphasized due to its crucial importance to innovation activities.

Last but not least is the **creative milieu**. Here a notion of innovation culture, which has been used frequently in existing national innovation system models, is expanded to emphasize the corner stone of creative economy – creativity. According to Florida (2002) creative milieu provides the underlying ecosystem or habitat in which the multidimensional forms of creativity take root and flourish. The creative milieu gives a city or region a dynamic image that attracts creative personnel in globally networked new economy industries (Flew, 2002).

The role of **the state** is given separate attention. As in Diamond model, the role of government is either to improve or detract from national innovation system's performance. According to Porter (1998) the main role of government in cluster development should be removing obstacles to growth and upgrading of existing and emerging clusters. Adapting Porter's views, the government can influence all of the elements of the national innovation system. The stronger the role of the state is the stronger is its influence on elements of national innovation system. In brief, the state is a background actor which by its actions guides the development of national innovation system. The idea of emphasizing the role of the state was also presented by Moon et al. (1998) in the Generalized Double Diamond model.

5.2. Creative Clusters in the Star -model

Obviously, the development of creative cluster as well as other clusters is influenced by all elements of national innovation system, but what about the other way around? How a creative cluster can contribute to the development of national innovation system? When examining the role of creative clusters in national innovation system Jaaniste's (2009) approach of placing creative sector within innovation system described in chapter three can be used as a foundation. Modifying Jaaniste's thoughts altogether seven possible linkages of creative cluster to national innovation system can be specified in the Star –model (figure 6). These linkages connect creative clusters with: education and training (1), science and research (2), international network (3), financing and support organizations (4), innovation cycle (5), creative milieu (6), and market conditions (7).

Figure 6: The role of creative clusters in national innovation system
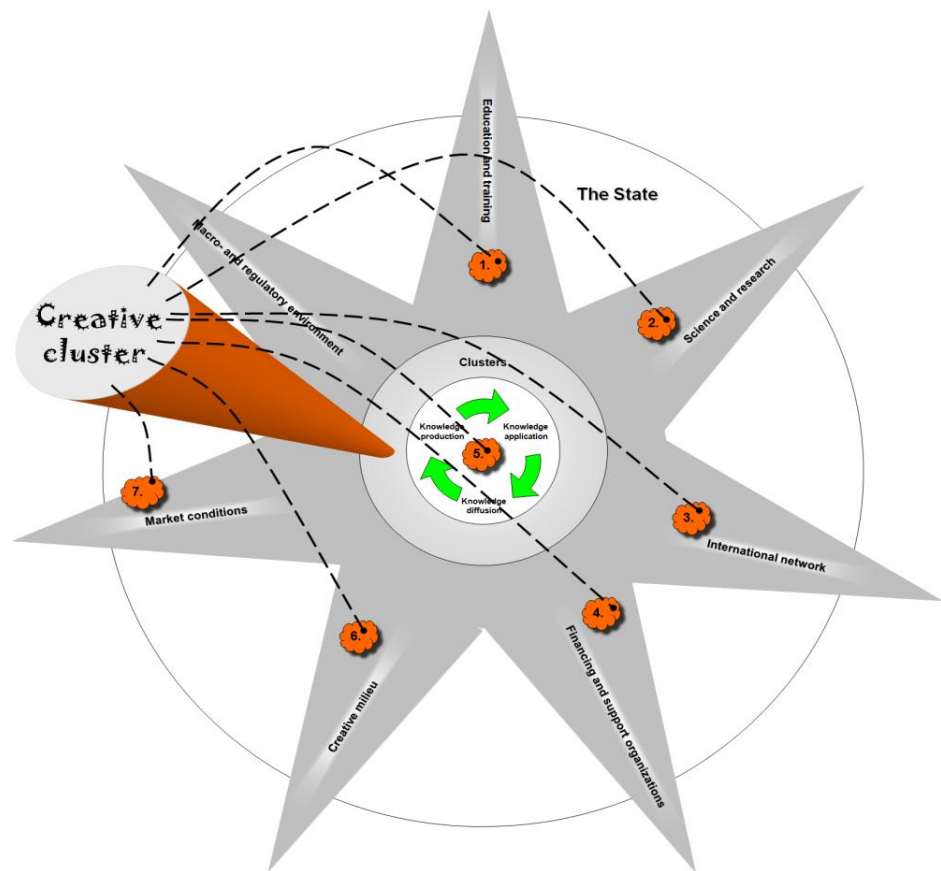
Linkage to education and training (1)

Among other businesses and organizations a creative cluster can also include actors and events of education and training. According to Jaaniste's (2009) educational argument creative sector can take place of a skills and training provider for would-be innovators throughout all domains and sectors. Jaaniste further adds that a rich 'creative curriculum' can build what has been called 'soft' or 'interpretive' skills such as teamwork, problem-setting and cultural-sensitivity, which complement the 'hard' or 'analytical' skills. Through adding elements of soft, creative and interpretive skills to learning process creative clusters have a possibility to influence education and training system as a whole.

Linkage to science and research (2)

Potts (2007) links creative sector to science and research by placing experimental fine arts within the stage of experimental research. Also Jaaniste (2009) argues that creative sector can act as knowledge creator, producing new concepts, methods and material outputs. In this case the creative sector is considered to be knowledge creator for science and research in general. Linking creative sector with science and research opens up new possibilities in science and research development thus enhancing the development of national innovation system as a whole.

Linkage to international network (3)

International linkages are basic assumption of modern economy and as it was stated before, it is hard to imagine that a national innovation system would be able to stay competitive without having international linkages. As Flew (2002) pointed out new economy industries are globally networked and creative clusters are part of the new economy. Being part of modern and globalized economy creative clusters might be even more internationally linked compared to the clusters in more traditional sectors. Thus, through their own international linkages creative clusters facilitate establishing of international networks of the whole national innovation system and its integration to global economy.

Linkage to financing and support organizations (4)

According to Jaaniste's (2009) cultural infrastructure argument the museums and cultural collection institutes are valuable repositories of knowledge and social memory of innovators (researchers, firms and public sector organizations) as well as the general public. Here creative clusters can contribute for example through arranging exhibitions and other events. It can be added that creative sector can also contribute to financing of innovations. Jaaniste argues that cultural funding and advocacy agencies can also be seen to provide systemic support and R&D funding to the creative sector. However, the influence is limited to creative sector only.

Linkage to innovation cycle (5)

There are many arguments linking creative clusters to innovation cycle. A knowledge argument places creative sector to knowledge production stage of innovation cycle (Jaaniste, 2009). The same argument is also used in linking creative cluster to science and research. However, in this case the creative sector can act as knowledge creator, producing new concepts, methods and material outputs in relation to particular field and particular innovation, whereas in case of science and research -related argument creative sector acts as knowledge creator for science and research itself. A business innovation argument places innovation activity inside the creative firm. Some forms of innovation, related to new content creation and aesthetic design directly reflect the core businesses of creative sector. (Jaaniste, 2009) In addition Potts (2007) places creative sector across all three stages of innovation cycle irrelevant to the industry. He also argues that knowledge diffusion for all the innovation economy might somehow be facilitated through cultural production and consumption. Thus, the creative cluster can be linked either to the science and technology -based innovation cycle or if the definition of innovation is expanded to include other industries as well, creative cluster can be linked to innovation cycle realized inside of the cluster itself.

Linkage to creative milieu (6)

Creative cluster has an important task of facilitating creative milieu which according to Flew (2002) gives a city or the region a dynamic image that attracts creative personnel in globally networked new economy industries. Florida (2002) argues that creative milieu provides the underlying ecosystem or habitat in which the multidimensional forms of creativity take root and flourish. A well-established creative cluster will attract creative professionals as well as creative people in general. This facilitates the emergence of creative milieu in the area. According to Jaaniste's cultural argument creative sector (or creative cluster in this case) provides "climate for creativity" and is important for attracting and retaining would-be innovators from home and abroad by making a region more interesting place to live and work. Furthermore, the creative sector also encourages a society in general to be more attuned to and seek change and innovation. Also Potts (2007) sees the creative sector not only providing cultural goods and services but also contributing to economic and social evolution, acting as 'experiments in growth' and 'forces for change'.

In general, creative industries provide creative capital to the innovation economy as a whole (Cutler at al., 2003). Also Jaaniste's embedded creatives argument sees creative sector to contribute to innovation in different sectors of economy through redeployment of creatives working across non-creative sectors of economies. Thus the personnel that leaves creative cluster can contribute their creative and soft skills for the benefit of innovation activity in other, non-creative sectors which in turn increases the whole innovative potential of the economy.

Linkage to market conditions (7)

Creative cluster can influence market conditions in many ways. Market conditions include demand, competition, suppliers and partners for actors inside a cluster and for cluster as a whole. As it was stated earlier, among others benefits of cluster approach include increased competitiveness, job growth and new firm formation. Creative clusters are no exception. By providing new jobs, they attract creative professionals to the area and facilitate establishment of new firms. This in turn has an influence on competition, suppliers and partners.

In addition, according to Jaaniste's product design argument, creative sector, especially design, adds aesthetic qualities and makes products more attractive to customers. Also Stoneman (2007) puts creative sector to the retail end of science and technology-based value chain. When science and technology-sector looks after the research, development and application of technological products, the input of creative sector is a way to connect these technologies to consumer market. This argument is in line with Jaaniste's marketing argument according to which creative sector is good for marketing and diffusing science and technology -based innovations, goals and activities. Thus, the creative input adds customer value and it is most likely to increase the demand for the product.

Based on the above linkages the following summary of tasks of creative clusters in national innovation system can be presented.

Table 2: The role of creative clusters in national innovation system

Influence the market conditions including demand and competition
Build a culture of creativity and innovation
Facilitate establishing of international networks
Archive and diffuse knowledge through cultural collection institutes
Produce own innovations inside the creative cluster
Add value and support the diffusion of innovations of other clusters and industries
Supply creative workforce and their creative skills for the benefit of innovative activities in non-creative sectors of economy
Create knowledge for science and research through experimental fine arts, new concepts, methods and material inputs
Educate and train skills for innovation from primary through to tertiary education

In the first part of this study the concepts of innovation, national innovation system, creative industries and clusters were elaborated. After an in-depth discussion a new theoretical framework for modeling national innovation system – the Star –model, was presented. Furthermore, the role of creative clusters in the Star –model was explored through linkages of creative clusters to the elements of national innovation system.

The latter part of the study puts developed theoretical framework to test in the context of Russia. First, Russian innovation system is explored. Then, on the basis of qualitative interviews the current state of creative clusters in Moscow and the role of creative clusters in Russian innovation system are evaluated.

6. Russian Innovation System in the Star –model

In this chapter current state of Russian innovation system is presented. After discussing historical background, the innovation system is analyzed in the framework of the Star – model. The chapter is concluded with presenting drivers and barriers for development of Russian innovation system.

6.1.   Historical Background of Russian Innovation System

The Soviet system of organization of R&D which was highly biased towards science and technology was established in the 1930s (Radosevic, 2003). Compared to modern innovation systems the innovation activity in Soviet Union was organized quite differently. R&D was not organized as an 'in-house' activity, or R&D in industry, but as R&D *for* industry which meant that much technological activity was oriented towards the needs of industry and yet was outside the enterprises (Radosevic, 1999). In comparison to western countries the role of research institutes in innovation system was much more crucial. In fact, almost all of R&D and innovation activities were concentrated in research institutes of the Academy of Sciences and in institutes of industrial ministries. The active role of research institutes in innovation system was accompanied by high governmental influence. The objectives of R&D system were mainly to support the sophisticated military and space programs and to provide the degree of technological self-sufficiency (Radosevic, 2003). Universities became almost exclusively training centers with little R&D activity (Gokhberg et al., 1997). Also enterprises were treated as organizations that only implement designs created elsewhere (Radosevic, 1999). These institutional characteristics were the fundaments of the Soviet R&D system and differed significantly from western countries where

R&D activities rose in the industrial firms and at universities in the beginning of 20th century (Gokhberg et al., 1997).

Another peculiarity of Soviet R&D system which shows signs in modern Russia's national innovation system was the structure of Soviet R&D institutes. They were hierarchical with strong vertical linkages but almost no linkages on the horizontal level. This made scientific interaction and inter-sectoral R&D projects difficult. (Egorov et al., 1999) However, Radosevic (1999) argues that it was the actors, not the links which were the main problem in socialist economies. The central actor on innovation system, enterprise, was seen as merely production organization and they were not able to embody innovation and to act as a network organizer. Instead, network organizers were ministries and branch R&D institutes. This led to unrelated flows of production, market and technology knowledge and finance, which resulted in a slow pace of innovation and weak structural change. (Radosevic, 1999)

Jormanainen (2010) sums up the main characteristics of Russian R&D system during the Soviet period. These were a high degree of state coordination and control, which often had a political nature and was highly bureaucratic, low R&D activity in industrial enterprises, underdeveloped links with western scientific world, which slowed the pace of development of new advanced technologies and a balanced system of education ensuring the sufficient supply of graduates to all branches of the economy.

The creation of market-oriented innovation system in Russia started in the beginning of the 90s. Dezhina (2007) divides this process into three stages. During the first stage (1991-1998) science and technology sector faced an important decrease of funding. With the financial crisis of 1998 all institutional reforms, including reforms aiming at restructuring S&T were suspended. Lack of financing combined with the crisis of 1998 hindered the pace of restructuring of innovation sector during the 90s. The last phase of reforms began with the economic recovery of Russia, as economic growth enabled certain Russian firms to catch up in the field of technological innovation (Dezhina, 2004). However, the overall situation in innovation sector didn't improve that much in the beginning of 2000s since governmental actions at that time were focused on structural changes and rebuilding of relations between government and large enterprises (Panfilo et al., 2007). During the late 2000s the weight and appreciation of

science and innovation sector has been gradually increasing. The background for this can be seen in Russia's strive to develop knowledge economy and overcome raw material dependency. The emphasis of innovation activities on the governmental level has resulted in increasing financing from the state budget. Also concrete measures have been taken in creating support structures for stimulating innovative activities. These measures have taken forms of special economic zones, technology parks, as well as innovation and technology centers.

6.2. Current State of Russian Innovation System

Drawing a clear picture of Russian innovation system is rather difficult task since the structure of the system is very complex in terms of legal status, ownership and funding mechanisms (Komkov and Bondareva, 2006). In this research the analysis of current situation of Russian innovation system is conducted within the framework of the Star – model. Next, the elements of the model are discussed more thoroughly in Russian context.

6.2.1. Innovation Cycle and Clusters

The analysis can be started from the core of the Star –model – innovation cycle occurring within companies, organizations and clusters. Russia inherited between 65 – 70 % of Soviet science resources and despite the large cuts in 90s the sector is substantial (Krott, 2008). However, the rate of innovating has so far been disappointing. At the moment only less than one percent of research results make their way to economy through commercialization. The main reasons for that are lack of interest of Russian companies towards domestic innovations and inadequate service offering by research institutes. (Panfilo et al., 2007)

Furthermore, one of the main drawbacks of Soviet innovation system which still shows signs in modern Russia is a failure to develop innovations at the company level. According to OECD (2005) Russian firms are characterized by a comparatively low knowledge-intensity of their production, as a result of their low interest in innovation. Roud (2007) estimates the share of innovative companies in manufacturing sector in

Russia to be 14 % while in Germany and Sweden it is around 50 %. Similarly the share of innovative expenditures in the total sales is more than five times lower in Russia compared with Sweden and Germany (Krott, 2008). The weakness of the Russian innovation system is the scarcity of corporate R&D because business enterprises contribute less than 30 % of their resources for R&D (Kovaleva and Zaichenko, 2006). This share is rather small when compared i.e. with US (64,9 %) (Krott, 2008). R&D is conducted, as a rule, by research organizations (mostly government-owned), while companies join the project at the stage of manufacturing and sales (Dezhina and Zachev, 2007). Instead of innovating Russian firms prefer to buy ready-to-use technology from abroad and import innovation embedded in components than innovate themselves. Moreover, when Russian firms are engaged in innovative activities they prefer to outsource such activities to third parties rather than carry them out in-house. (Krott, 2008)

However the more fundamental challenge is lack of cooperation between science and industry. Dezhina and Zashev (2007) argue that the biggest problem of the Russian innovation system is the lack of efficient and result oriented mediating system that can link the knowledge generating subsystem (academia) and the knowledge exploiting subsystem be it in the form of industry, entrepreneurially oriented scientists, SMEs willing and eager to commercialize certain technology and offer it to the market, or venture capitalists specializing on innovation projects. They further add that this provides opportunities for foreign organizations that serve as actors within the mediating subsystem.

An efficient way of increasing cooperation activities between sectors is clustering. Support for emerging cluster based approach in Russian innovation system can be found in Radosevic (1999) according to whom sectors as organizational frameworks for innovation activities have lost their importance and meaning that they had previously in the socialist economy. Newly formed conglomerates and holdings are mainly inter-sectoral. In addition, Russian state follows cluster based approach in forming support structures for innovations, such as innovation- and technology centers, technology parks etc. One of the latest examples of state's cluster based approach is Skolkovo innovation center –project (see Antonova, 2010).

6.2.2. Market Conditions

According to Radosevic (1999) market demand is essential for restructuring process. In those sectors or subsectors where domestic demand is growing, it is more likely that progress and modernization will take place. However, the share of innovation-oriented enterprises is rather low in Russia and the largely inactive industry creates a certain vacuum for demand for innovation (Dezhina and Zashev, 2007). Another crucial challenge for Russian innovation system is diffusion and commercialization of innovations. Also here low demand for innovations from the side of Russian private companies play a certain role. Often, scientific results from Russian R&D institutes are not ready to be introduced to the market. These results are only at the stage of a technical prototype or concept and Russian firms are not willing to take the risks of commercial implementation and pay for the development costs of the innovation (Watkins, 2003).

Although, the overall number of enterprises decreased over the transition period there have been some signs of a growing interest especially from side of large Russian industry (resource extracting in particular) in financing R&D and in creation own in-house R&D divisions (Dezhina and Zashev 2007). Also small innovative enterprises have appeared. Their activities are primarily focused on the implementation of applied research and commercialization of innovations. (Dezhina, 2004). In general, Russian firms see the need for innovating and perceive benefits of innovations in decreasing their production cost, increasing their market share or accessing new markets (Krott, 2008).

6.2.3. Macro- and Regulatory Environment

The creation of dynamic innovation systems depends on the establishment of framework conditions concerning privatization, finance, legal protection, and communication infrastructure. These elements of national innovation system strongly influence innovation activities of enterprises and are also in more decisive role for the innovative activities in the transition period. (Radosevic, 1999)

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The main macro-environmental challenges for innovations in Russia are related to intellectual property rights legislation, innovation policy itself and business environment (Krott 2008). Throughout the transition period Russia's underdeveloped legal framework has been one of the barriers for creation of well-functioning innovation system. For example in the field of intellectual property the rights for results of science and technology –projects have been given to organizations instead of researchers, which significantly impeded commercialization of innovations. There has been some development in the field of IPR-legislation during the recent years, in which Russia's negotiations to enter WTO have played an important role (Panfilo et al. 2007). At the moment Russia possesses a legal framework comparable with western countries in the field of intellectual property rights. However, uncertainties regarding the ownership of IPR create problems for the innovation system in Russia. The current unclear regulations complicate the partnership of research institutes with the private sector, hinder technology transfer and impede the development of spin-offs into growing businesses. Moreover, the uncertainties regarding IPR create conflicts of interests for research institutes, and even between researchers and their organizations. (Zolotykh, 2006) Also the public authorities are unable or unwilling to prosecute IPR violation. This is a particular concern for foreign investors and exporters facing copyright piracy or patent violation by domestic firms (Desai 2007).

Overall, much improvement has to be done in Russian business environment in order to facilitate innovations. A healthy business environment is a precondition for boosting innovation activities therefore it is crucial to improve the framework conditions. Sound macroeconomic conditions like robust GDP growth, low inflation and low real interest rates have positive influence on the growth rate of R&D. Similarly secure property rights and low barriers to market entry influence the rate of innovation. The Russian business environment still suffers from significant administrative costs, policy-induced risks and formal and informal barriers to competition. (Desai, 2007)

6.2.4. Education and Training

Already since the foundation of Academy of Sciences in 1742 research and education were separated putting academies in charge of research and leaving universities with education (Kovaleva and Zaichenko, 2006). This division has been maintained up to

date. At the moment universities in Russia have only a minor contribution to scientific advance of Russia and its innovation system. Only few universities carry out research activities (Krott, 2008). Most of higher education institutes still stand aside of the R&D system because they are still considered to be primarily responsible for education. (Lisitsyn, 2007) During the last years, there have been some attempts to involve universities more actively into scientific process. Universities are trying to build a new position based on the stability that comes from teaching, but are also attempting to reorient their activities towards research (Radosevic, 1999). Also the possibility of reforming Academy of Sciences and integrating their research activities into universities has been widely debated.

The main problem in Russian education sector is the quality of education. Despite the fact that more than half of Russian population aged between 25 and 64 have accomplished higher education (OECD, 2007) the skills provided by educational system do not match with the skills required in the labor market (Tan et al., 2007).

6.2.5. *Science and Research*

Science and basic research in particular was one of the strong points of Soviet innovation system and Academy of Sciences with its institutes constituted a core of research activities. Throughout all restructuring efforts in the 90s Academy of Sciences has managed to maintain its powerful role and it is still one of the key players in Russian innovation system (Kovaleva and Zaichenko, 2006). Institutes of Academy of Sciences play a crucial role in innovation process most often working on the scientific and research components of the process (Radosevic, 2003). The Academy of Sciences is a non-profit organization which role is to make alignments for science and research on national level as well as implement the research activities (Panfilo et al., 2007). The Russian Academy of Sciences (RAS) is organized by science subjects into nine different departments and divided into three regional branches (Far East, Siberian, and Ural) as well as 14 regional scientific centers. It is the biggest scientific organization of the country comprising 463 institutions with 106000 employees of which approximately 62000 are researchers. The RAS represents about two thirds of all basic research and about 10 % of all applied research conducted in the country. (Ivanova and Roseboom, 2006) Lisitsyn (2007) argues that a clear division of responsibility for

carrying out different types of research based on old Soviet tradition still exists today. The RAS is responsible for fundamental research while the federal R&D centers are responsible for applied research.

The collapse of Soviet Union and significant subtraction of funds allocated to science lead to a massive brain drain as many of Russia's best scientists left the country. The brain drain continued throughout the 1990s and as a result there is a lack of middle-age generation in Russian science field. (Panfilo et al. 2007) Due to lack of funding and low salary levels the science sector has also struggled with acquiring young personnel. These challenges have raised the age structure of science sector to a high level with many scientists nearly 80-years old. However, with the increase of funding of science sector, which has been taking place during the last few years, the salary levels have risen and more young graduates are attracted to the field.

6.2.6. *International Network*

According to Dezhina and Zashev (2007) international collaboration could be one way to improve situation with innovations in Russia. Radosevic (1999) approaches international cooperation and developing innovation system from the point of view of learning and argues that learning inputs from foreign partners through different forms of foreign direct investment, alliances and subcontracting are essential in developing economy. Regarding the industry Radosevic argued in 1999 that innovation activities were strongest in the links with foreign enterprises. The same argument is still valid. As it was stated before, most Russian companies lack either interest or resources (or both) for innovating and most of innovations in Russian industry sector are produced in the cooperation with foreign partners.

6.2.7. *Financing and Support Organizations*

The most important source of funding for innovative activities is federal state, which allocates resources to innovative actors as directed grants (Krott, 2008). The share of state financing in innovative activities has been growing during the recent years. Over 60 % of R&D funding comes from the state budget. In comparison the share of state in R&D funding in developed economies alters between 20 % and 50 %. (Dezhina, 2006)

However, there are also other forms of financial support. During the reorganization period a number of budget and non-budget funds were established in order to finance the innovative activities. Their resources were distributed on the basis of open project competition, which was a new form of support. In addition, also foreign sources of capital were now available and foreign investors became increasingly interested in cooperation with Russian scientists. Attempts to reform funding of innovative activities have increased during the 2000s. The reforms are aimed at making the financing of public R&D more transparent, target-oriented, and efficient. As a side effect, the new approach seems to worsen the problem of corruption and lobbying as only a narrow circle of organizations is granted project funding (Dezhina, 2004).

The emphasis on innovative activities by government has resulted in increased funding of the innovative sector. Still there are issues related to inefficient use of funding as well as funding fragmentation. At the moment there are numerous organizations and programs aimed to support innovation activities but there is only little interaction between them (Panfilo et al., 2007). As for private sector, financing of innovative activities has also slightly increased there. However, a majority of Russian companies are not investing in innovative activities preferring to "import" innovations embedded in foreign technologies (Krott, 2008).

The significance of SMEs and innovations for Russia's economic development started to be recognized more clearly since the middle of 90s and government started to introduce supportive structures for innovative SMEs (Panfilo et al., 2007). Since then, in order to stimulate innovation activity and promote commercialization of innovations, the state has created special economic zones, technology parks, innovation- and technology centers and granted some cities a special status of science city. In addition, technology parks and science cities that had been established in the Soviet era were reoriented and adjust to new economic conditions (Dezhina, 2004). One of the examples of innovation support is Information technology -parks. The government introduced the idea of IT-parks as a new type of innovative infrastructure and total of seven regions were chosen for IT-park establishment. These IT-parks are receiving state financing for construction of infrastructure (communications, roads) and it is assumed that with larger government investments in infrastructure and

services, this form of technology parks will be more effective. (Dezhina and Zashev, 2007)

6.2.8. Creative Milieu

During the last few years there have been continuous attempts from the side of the state, president Medvedev in particular, to guide Russian society towards the path of innovation-based economy. As it is argued by many authors (Florida, 2002; Jaaniste, 2009; Flew, 2002) creative milieu provides the underlying ecosystem for attracting and retaining would-be innovators.

It is quite difficult to evaluate the state of creative milieu in Russia. Creativity as such can be considered as one of the strong points of Russia. Creativity has been cultivated in Russia throughout the years by its rich cultural heritage. A vast number of world-class actors in traditional sectors of culture, such as theatre, classical music, ballet, and literature serve here as a perfect example. However, also a drawback of rich cultural heritage must be noted. For Russians culture means heritage and traditions. According to Gnedovsky (2005) emphasizing traditions and heritage Russians basically ignore the innovative potential of culture. It is considered more as ground under feet and not as a tool for development.

The relation between creativity and business in Russia is somewhat complicated. Starting from Soviet Union where culture was subordinated to serve the needs of Soviet ideology and after tens of years of confronting arts with business and capitalism, there still is a long way to go before people begin to accept business way of thinking into arts and many other creative sectors. According to Zelentsova and Gladkeeh (2010) this kind of mentality could be clearly noticed when the discussion about creative industries and their economic potential started to emerge in the beginning of 2000s. And to some extent the confrontation between creative sector and business is still present up to date.

There is a solid foundation in creative milieu in Russia as creativity in general can be considered as one of the strengths of the country. However, fostering creativity and developing creative milieu further is still neglected in some parts. Areas, which would

concentrate and accumulate creativity, are only beginning to emerge. Furthermore Russia's creative milieu is biased towards traditions and heritage thus neglecting the innovative potential of culture. Thus, it can be argued that creative milieu in Russia in its current state is not efficient in transforming existing creativity to serve the purpose of innovative economy.

6.2.9. The State

The state has a key role in Russian innovation system and it has a crucial influence on all elements of national innovation system. During the Soviet times the state defined the priorities for development of science and education, allocated funds and coordinated implementation of the plans. Likewise the state was also responsible for industrial policy and industrial structure (Jormanainen, 2010). No need to say that state interference was pervasive in all parts of innovation process, even in basic research activities (Radosevic, 2003). After the first few years of transition, the Russian government managed to undertake actions towards the stabilization of the science and technology sector and its further transformation into a conventional type of innovation system suitable for the market economy (Jormanainen, 2010). According to Dezhina and Zashev (2007) the government started various activities in order to link R&D organizations, universities, and business sector during the post-soviet era. They group these activities in support of small innovative enterprises through R&D grants and creation of technical infrastructure (such as technology parks and innovation technology centers); encouraging cooperation between R&D sector and private companies through support of joint projects; and creation of favorable legal environment for innovation (IPR regimes).

At the moment Russia's innovation policy is to a large extent developed hierarchically in governmental institutions. Due to centralization of power the responsibility of innovation policy is cumulated to ministries. These are ministry of science and education, ministry of IT and communications, and ministry for economic development. Agencies functioning under these ministries are responsible for practical implications of innovation policy on regional and local level. (Panfilo et al., 2007) Also the possibility to introduce a separate ministry for innovations has been discussed recently (Newsru.com, 2010). In addition, Academy of Science still has a large weight

in guiding science and research, though its autonomy has decreased during the last few years.

The state has also a key role in education and basic research. The ownership in both of these areas is strongly centralized to the state (Panfilo et al. 2007). Although, private sector is considered to be an important part of innovation system, it is not included sufficiently in developing the innovation system. Compared to other developed countries the role of government in Russia's innovation system is still considerably larger. Another challenge is related to structural organizational barriers inherited from Soviet Union which is reflected in practical implications of state's innovation policies. On governmental level innovation policy seems to be clear and feasible but the practical implication is hampered by complex and outdated organizational structures. The Skolkovo innovation city –project and government's strategy to build it completely from scratch is an attempt to bypass these challenges.

Altogether, there has been a vast of different approaches to stimulate development of innovation system from the side of the state, which indicates activity but on the other hand, a lack of focus. Dezhina and Zashev (2007) criticize the government for having one too many ideas how to develop the innovation system and little patience to wait and monitor if a certain policy manages to bring tangible results.

6.3.   Drivers and Barriers for Development of Russian Innovation System

Despite restructuring attempts and many positive changes, Russia's innovative performance has so far been disappointing. OECD's report (2005) points out that Russia's innovative performance is poor despite its large R&D basis, R&D investment, and accumulated stock of human capital. According to the report Russian enterprises are much less involved in innovative activities than western enterprises. Moreover Russian exports of science based products are strikingly low. Currently, most of innovations in Russia are of incremental type. Most innovations are adoption of existing technologies and non-technological innovations like new marketing methods, new business models etc. Science-based innovations are marginal because of the low

demand of scientific input by industry and the lack of clear commercialization strategy in public research center. (Krott, 2008)

Dezhina and Zashev (2007) see science sector and actions of government as the main obstacles for smooth development of national innovation system in Russia. According to them Russian science sector is largely governmental and not modernized. In addition, actions of government to support development of innovation system are highly fragmented. Monitoring and on-going correction of applied measures are at insufficient level. Furthermore, there is a shortage of indirect measures to encourage cooperation between research organizations and industry, as well as minor stimulus for larger industrial enterprises to increase their innovation activity because of underdeveloped regulations in variety of areas, including IPR. Lastly, there is still large influence of Soviet mentality on the decision-making process, which hinders the restructuring process. (Dezhina and Zashev, 2007)

Also enterprise sector in Russia still faces numerous problems in promoting innovatory activities. The tools applied by the government did not work as efficiently as expected, new practices were not adopted by the majority of actors of the innovation system, and the state was either unwilling or unable to implement important changes to formal institutions. In addition, formal policies developed during the previous two decades have failed to create incentives for enterprises to undertake innovation activities and the modernization of industrial sectors, as there still is little to motivate industrial enterprises to make the longer-term development plans that require significant capital investments. (Jormanainen, 2010)

One of the negative legacies inherited from the Soviet linear innovation system is structural imbalance and weak linkages between actors in the current innovation system in Russia. According to Dezhina and Zashev (2007) in recent decades three worlds of public research, business and government, which were once very much separate, started increasingly to converge. However, the development of linkages between science and business is complicated because government sector of science does not have real stimulus to cooperate with industry.

Despite all the challenges there are quite a few factors that facilitate the development of Russia's innovation system. Among these factors a vast scientific potential combined with high quality basic research can be mentioned. In addition, support structures for innovative activities have emerged and state support in developing science and innovation sectors has grown over the last few years. In terms of efficient use of state support, result oriented financing models are increasingly being implemented. (Panfilo et al., 2007) Furthermore, Jormanainen (2010) brings up increased share of private sources of finance from both domestic and foreign investors. Also creation of linkages of foreign actors to local firms has been stimulated. Dezhina and Zashev (2007) add that Russian innovation system demonstrates advantages in the phases of idea screening, concept development and it is particularly strong in the idea generation phase.

Altogether, the emergence of fully functional national innovation system requires systemic approach since the elements develop hand in hand and influence each other. As argued by Nelson (1997:29) ''in those cases where the national institutional environment, or legal structures, or specific policies, seem to have made a big difference, one also sees firms effectively taking advantage of the potential''. Nelson is accompanied by Radosevic (1999) according to whom firms themselves upgrade national factors while taking advantage of them. Radosevic further adds that overall, the national innovation systems in post-soviet economies are fragmented, and each institutional sector and organization is searching for its own optimum unrelated to others. Linkage creation and cooperation involving several organizations from different sectors like industry, university, academy or industrial institutes is still in its beginning stages. Though, during the last ten years the Russian government has undertaken an effort to create market-oriented innovation system with a special emphasis in recent years on stimulating development of linkages between government R&D sector, universities, and private companies (Dezhina and Zashev, 2007).

For Russia's current situation thoughts of Radosevic (1999) can be applied. Radosevic argued that instead of fully functioning innovation systems former socialist economies including Russia basically have fragments of the old R&D systems, which are trying to adjust through a set of diverse survival strategies and new pockets of innovation

activities. Despite many positive changes and commitment to building knowledge economy and well-functioning innovation system demonstrated by a part of Russia's political elite, country's innovation system is still at its emergent phase and the process of restructuring is far from being over.

Next table sums up the main drivers and barriers for development of Russian innovation system.

Table 3: Drivers and barriers for development of Russian innovation system

Drivers:	Barriers:
Substantial science sector and scientific base	Low innovative activity in industry
Efforts to strengthen the linkages between science, education and industry	Low commercialization and diffusion rate of innovations
Growing state support of science sector and innovations in general	Weak linkages between science, education and industry
Strong cultural heritage forming creative milieu	Unclear IPR-legislation and unwillingness of authorities to prosecute IPR-violations
High quality of basic research	Lack of connection between creative sector and business
Strong points in phases of idea generation, idea screening and concept development	Skills provided by educational system don't match the requirements of the industry
	Science sector in particular needs modernization
	Narrow approach towards the concept of innovation

In the following part of the study the role of creative clusters in Russian innovation system is empirically evaluated and applied to the theoretical framework. Next, the methodology of the study is presented.

7. Methodology of the Study

The methodology chapter presents research approach and research method used in this study. In addition, case selection and data collection processes are described. Finally, validity and reliability of this research are evaluated.

7.1. Research Approach

This research is a "snapshot" or cross-sectional description of current situation in creative clusters of Moscow. It places interview insights into theoretical framework which studies the relationship between creative clusters and national innovation system.

Saunders et al. (2007) identifies three dominating research views. These are positivism, interpretivism and realism. Positivism stresses the role of objective analysis and highly structured methodology to emphasize replication. Quantifiable observations are often used in order to ensure objective analysis. Interpretivism is chosen frequently in the case of business and management research. Opposing positivist view interpretivism argues that rich insights into complex world of business and management are lost if such complexity is reduced to a series of law-like generalizations. Interpretivism emphasizes subjectivity and doesn't consider generalization of the results to be of crucial importance. The realistic approach suggests that there exists a reality which is independent of human thoughts and beliefs. Thus, in the study of business and management it can be argued that there are large-scale social forces and processes that affect people without their necessarily being aware of the existence of such influences on their interpretations and behavior. Realism recognizes the importance of understanding people's socially constructed interpretations and meanings, or subjective reality, within the context of seeking to understand broader social forces, structures or

processes that influence, and perhaps, constrain, the nature of people's views and behavior. (Saunders et al., 2007)

In this research a realistic approach is chosen. The aim is to examine subjective reality of interviewees in the framework of national innovation system. Although national innovation system is not independent of human thoughts and beliefs, it still can be considered as objective reality. The concept of national innovation system consists of several broad factors influenced by many and thus cannot be altered on a subjective basis.

As for approaches in doing research Saunders et al. (2007) mentions deductive and inductive approaches. Where in deductive approach the theory and hypotheses are developed first and strategy for data collection is designed to test the theory and hypotheses, in inductive approach the theory is developed as a result of data analysis. Using highly structured methodology a deductive approach is more applicable to positivism. However, also combining of these two approaches is possible and even recommendable in some cases. An abductive approach combines both inductive and deductive approaches. It is a continuous process, taking place in all phases of the research process where analysis proceeds by the continuous interplay between concepts, conjectures and data. (Van Maanen et al., 2007)

For the purpose of this research an abductive approach is chosen. Although the study is build on the principle of developing theory first, and data collection is designed to test this theory, using deductive approach is not suitable since there is no well-established theory to address the topic of connecting creative industries with innovations. Therefore, it is important to maintain continuous interplay between theory and empirical evidence in order to be able to correct possible defects of a newly introduced theory. This is also one of the reasons for selecting semi-structured interviews as a data collection method instead of structured interviews. In latter method there is a risk of limiting interview fully into the proposed theoretical framework, and this risk needed to be avoided. Furthermore, the initial analysis of interviews was conducted separately from theoretical framework which eliminated the risk of steering the results towards wanted results. It was only second round of analysis in which the findings were examined in respect to the proposed theoretical framework.

7.2.   Research Method

Using abduction approach puts some requirements on method selection. The method must be selected so that it would sufficiently respect both the primacy of theory and the primacy of evidence. First, the data should be sufficiently detailed, rich, and complex. Second, in order to be able to modify theory on the basis of empirical evidence, researchers are forced to link their findings with theoretical concept. (Van Maanen et al., 2007)

Based on the above reasoning a case study strategy is chosen for this research. According to Yin (1994:13), "A case is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident". The case study strategy has an ability to generate answers to the questions "why?" as well as the "what?" and "how?" It is especially suitable for gaining rich understanding of the context of the research and the processes being enacted (Morris and Wood, 1991) According to Saunders et al. (2007) a well-constructed case study can be a tool for changing an existing theory and also provide a source for new hypotheses. Eisenhardt (1989) states that the case study becomes particularly useful when there is not much empirical evidence available and when a research phenomenon is not widely documented. Furthermore, Yin (1994) recommends the choice of case study strategy for researchers who deliberately want to cover contextual conditions which are believed to be pertinent in the research phenomenon.

A case study research can include both single and multiple case studies (Yin, 1994). Here, a multiple case study is chosen in order to ensure the richest possible data. Furthermore, the cases were supplemented with additional expert interviews for increasing credibility of the study.

7.3. Description of the Sample and Data Collection

Altogether eight interviews with nine respondents were conducted for the purpose of this research. One of the expert interviews was conducted with two experts simultaneously. Four of the interviews were made with high level managers of creative clusters. They were assumed to have an extensive knowledge and expertise of cluster's operations on strategic level. The clusters themselves were selected on the basis on experts' recommendations and key selection criteria. The key selection criteria were three affirmative answers to the following questions: does the cluster have necessary clustering characteristics as in cluster definition by Porter? Does the cluster operate in the field of creative industries? Does the cluster have a common management? In order to ensure unbiased information about the clusters' operations four additional interviews were made with five independent Russian experts in the field of creative industries.

Apart from three expert interviews which took place in St. Petersburg in July 2009, the rest of the interviews were conducted in Moscow in December 2009. All interviews were carried out on face-to-face basis. Furthermore, the respondents were offered to select a place for the interview for assuring a comfortable environment and more open conversation. All of the manager interviews took place in the premises of creative clusters. Expert interviews were carried out in offices of the respondents.

Table 4: Interview details

Interviewee	Time	Place	Duration
Expert 1	2.6.2009	St. Petersburg	70 min
Expert 2	4.6.2009	St. Petersburg	105 min
Experts 3-4	10.6.2009	St. Petersburg	80 min
Expert 5	15.12.2009	Moscow	61 min
Cluster Maanger 1	16.12.2009	Moscow	114 min
Cluster Manager 2	16.12.2009	Moscow	66 min
Cluster Manager 3	17.12.2009	Moscow	53 min
Cluster Manager 4	17.12.2009	Moscow	47 min

The interviews lasted approximately one to two hours and were recorded with the permission of the respondents. Prior to recording all interviewees were promised full anonymity. Further processing of the interviews was started by careful transcription of

interview recordings. This allowed a more in-depth analysis of interview data at the later stage of the research.

Since no established theoretical framework exist for exploring the role of creative clusters in national innovation system, such framework had to be developed for this research. This framework also served as a foundation for designing interview questions. A semi-structured interview method was chosen in order to ensure gathering in-depth information as well as leave some space for maneuver in case of possible false assumptions in the newly developed theoretical framework.

7.4.   Validity and Reliability of the Study

Validity, reliability and generalizability are concepts that provide a basic framework for the evaluation of research in business research (Eriksson and Kovalainen, 2008:291).Validity is concerned with whether the findings are really about what they appear to be about (Saunders et al., 2007). In other words validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. Validity can be divided into internal and external validity. Internal validity deals with accuracy of chosen methods with which the study is conducted (e.g. study design and measurements) and the extent to which the researcher of the study have taken into account alternative explanations for any causal relationships he/she explored. External validity refers to the state to which results of the research are generalizable, that is whether your findings may be equally applicable to other research settings. On the other hand, reliability refers to the extent to which data collection techniques or analyzing methods will yield consistent findings on repeated trials, or how similar the results are if the research is repeated using different forms. According to Easterby-Smith et al. (2002) reliability can be assessed by posing three questions: will the measures yield the same results on other occasions? Will similar observations be reached by other observers? Is there transparency in how sense was made from raw data?

Yin (1994) presents some criteria for evaluating validity and reliability of case studies. According to him validity can be increased by using multiple sources of information. On the other hand measuring reliability aims at minimizing the errors and bias in a

study. Also the choice of interviewees can impact the reliability of the study as all the answers are subjective. According to Riege (2003), the case study method has been criticized for being more subjective than other research forms due to a direct contact between the researcher and the organizations or people examined.

In order to increase validity multiple cases are analyzed in this research. In addition, to ensure neutrality of information and acquiring the richest possible data, independent experts of the field were interviewed. The rich data allowed more in-depth understanding of phenomenon. For decreasing the risk of a bias, a semi-structured interview approach was chosen for this research. Furthermore, all interviewees were promised anonymity. To minimize the risk of error and to achieve more in-depth perspective, the interviews where carefully transcribed before analysis.

According to Yin (1994), external validity is often a major barrier in doing case studies, especially if only one case is applied. Therefore several cases are used in this research. However, the generalizability of results is not the aim of this study.

8. The Creative Clusters of Moscow in Russian Innovation System

The focus of this chapter is on empirical analysis. First, a background for creative industries in Russia is presented. In addition, creative clusters selected for the case study are briefly introduced. In the latter part of the chapter current state of Moscow's creative clusters and their role in Russian innovation system are evaluated.

8.1. Creative Industries in Russia

Russia is a challenging environment for creative industries. Furthermore, the challenges faced by creative industries are fundamental by their nature. Russia is still considered as economy in transition and it hasn't reached the phase of post-industrial economy. Like many other countries in transition, Russia has not yet wholly understood the economic aspects of creativity and the way it contributes to entrepreneurship, fosters innovation, enhances productivity and promotes economic growth. The economy is based mainly on natural resources which creates structural barriers for creative industries as a sector of economy in Russia (Goncharik, 2008).

A fundamental challenge for development of creative industries lies also in perceptions of creative industries and culture. According to Gnedovsky (2005) Russians perceive creative industries and culture as closer to cultural heritage and traditions, it is considered more as "ground under feet rather than a tool for development". Gnedovsky further adds that by emphasizing traditions and heritage side of culture Russians basically ignore its innovative potential. This thought is supported by example of cultural financing. In Russia, in most cases investing in culture means preservation of traditions and cultural values and not innovation in any form (Goncharik, 2008).

In addition Gnedovsky (2005) raises an issue of common identity of creative class According to him the creative industries are atomized and they do not form a unified field in Russia. Creative professionals do not see themselves as members of one "creative class". Also the rest of the society doesn't see creative industries as a separate sector of economy and this is reflected on political level. There is a lack of clear policies towards the creative sector at federal, regional and municipal levels and at the moment there is no understanding or political will for developing creative industries as such. Up till now there hasn't been any support from the state for creative industries in forms of supporting policies or programs. Mainly the support of the idea of creative economy comes from below – from non-governmental organizations, businesses and private people (Goncharik, 2008).

Ruutu et al. (2009) summarize the challenges of creative industries in Russia. Starting from the definition of creative industries, the fact that the concept is somewhat vague even in the international discussions can be also seen in Russian context. Creative industries in Russia are described as "atomized" and creative professionals do not see themselves as members of one "creative class". Moreover, this ambiguity is reflected in lack of clear policies towards the creative industries sector at federal, regional and municipal levels. Due to absence of an explicit definition for creative industries in legislation, authorities have limited opportunities to target support for this sector.

Despite all these fundamental challenges the statistics show that creative industries have quite a prominent role in Russian economy (see Creative Economy Report, 2008). Already in 2005 creative industries comprised 7.3% of national employment and their contribution to gross domestic product (GDP) in Russia was 6.06%. For comparison, in the US these figures were 8.5% of national employment and 11.1% of GDP. Also many international researchers and analytics of creative industries have stated that Russian economy has a big potential for growth and big possibilities for creative industries. For example Florida (2008) draws quite a positive picture of the potential of creative industries in Russia. According to him a truly global creative class has emerged and is growing in Russia and that the country's young people are participating in cutting-edge trends with the help of international distribution of television and movies, the boom in Internet and social media. But not only international interest has sparked towards Russian creative industries. During the last years there has been an

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emergent interest inside the country towards creative industries on regional and municipal levels of the state as well.

8.2. Creative Clusters of Moscow

According to Ruutu et al. (2009) creative clusters in Russia are still in their development stage. Some examples of creative clusters and centers can be found in different regions of Russia. Despite of the fact that recently there have been some steps of creative cluster development in regions and cities such as Perm region and the city of St. Petersburg, the most advanced stage of development of creative clusters can be observed in Moscow. The city has been leading the way in creative cluster development since its first clusters started to emerge in mid 2000s. Also the number of creative clusters in Moscow clearly exceeds other Russian cities. Concentration of creative industries' clustering activities to Moscow was the main reason for limiting this research to include creative clusters of this city only. Altogether four creative clusters were selected and approached for the purpose of this research - ArtPlay, Flacon, Proekt Fabrika and Winzavod. These clusters are introduced next.

ArtPlay

The history of ArtPlay can be traced back to 2003 when a conversion of old silk factory into a creative cluster started. Opened fully in 2005 the cluster provided studio-style units mostly to companies related to architecture and design. (Ruutu, 2010) However, the cluster moved to new premises in 2008 basically starting the whole project from scratch. An ambitious project of transforming former manometer factory into a fully

functioning creative cluster is still in the middle of implementing.

The business concept of ArtPlay is to combine architectural services with interior design (Ruutu, 2010). According to ArtPlay's official web site the cluster brings together architects, designers, artists, engineers as well as the suppliers of furniture, lights, finishing materials and other special equipment. The idea is to provide all needed services and materials in the sphere of architecture and design under one roof. Apart from providing spaces for companies the cluster also offers venues for exhibitions, concerts, seminars and PR-events.

The space of the old manometer factory totals 75000 square meters. The complex includes 12 buildings which renovation is done step by step. At the end of 2009 there were around 200 companies operating in the premises. Two of the 12 buildings were already renovated and 60 of the companies were working according to the concept of ArtPlay. (Ruutu, 2010) The ultimate aim is that all companies located in the premises of ArtPlay would work according to the concept of the cluster.

The new premises of ArtPlay are located less than one km away from Winzavod and the closeness of these two clusters may well lead to fully established creative district in the near future.

Flacon

Flacon is the youngest of the clusters. It was founded in early 2009 and it is located in the northern district of Moscow at a former glass factory, where bottles for perfume were made during the time of Soviet Union (Ruutu, 2010).

Flacon's spheres of operation include design, media, fashion, architecture as well as other creative businesses. Tenants include advertising- and event agencies,

design studios and services, showrooms, workshops etc. Mainly provided spaces are designed in loft-style. In addition to providing spaces to creative businesses, Flacon is active in event organizing. The events include lectures, exhibitions, movie shows, parties etc. The cluster has also a presentation function in form of small shops.

As ArtPlay, the project of Flacon is also in the middle of implementing. The former glass bottle factory covers a total area up to 21000 square meters, and will be renovated step by step in view of the actual needs of professional community (Ruutu, 2010).

Proekt Fabrika

Proekt Fabrika was founded in 2004. The cluster includes more than 700 square meters of exhibition spaces, an international residency, and 1000 square meters of venue space destined to accommodate diverse cultural and social events. such as dance, theatre and music concerts. Proekt Fabrika's operational focus is on visual arts, contemporary theatre and dance, and media. In 2008 the cluster became a member of Trans Europe Halls (European network of independent culture centers). (Proekt Fabrika official site) Proekt Fabrika is located in the grounds of technical paper factory October originally built in 1870's. Part of the factory is still functioning and producing paper. The premises of factory are divided into three functional areas: production spaces, business offices and art centre consisting of non-commercial organizations and art venues. Thus, the factory is a combination of art, business and industry. (Ruutu, 2010)

Apart from renting spaces and exhibition activity the cluster is also active in developing joint projects in drama and documentary as well as in cooperation with

other contemporary art galleries in Moscow. According to the website of Proekt Fabrika it is the first independent not-for-profit contemporary visual art organization in Moscow. The project is committed to promoting cultural and intellectual diversity through the presentation of international contemporary art and culture.

Winzavod

Winzavod was opened in early 2007 and it is a first private art-territory in old Moscow industrial area. Operating in the premises of old winery the cluster is a combination of art galleries, exhibition spaces and art organizations. Winzavod is also home to artists'

studios, a photography studio, an advertising agency, an avant-garde clothing store, a styling school, an art supply store, a bookstore and a stylish art-cafe. In addition Winzavod is also active in arranging festivals and different educational courses, such as modern art, cinematography, architecture and design as well as charity events. According to cluster's web site Winzavod offers tailor-made spaces and full complex of services for any kind of events. (Winzavod official site)

Located near Moscow's core centre, 15-minute car drive away from the Kremlin, the cluster consists of seven buildings with a total space of 20,000 square meters located on privately owned, gated property. According to Winzavod's web site the priorities of the cluster are arranging and holding of personal exhibitions, curatorial projects, educational programs, charity programs and patronage of young artists. The general aim of the cluster is to connect people who have a meaningful role in contemporary art at the same place.

8.3.   Insights from the Interviews

Insights from the interviews can be broadly divided into six subfields. These are creative milieu and cultural heritage, market conditions, financing, the role of the state, education and training, and international orientation. The findings are presented next.

8.3.1. *Creative Milieu and Cultural Heritage*

In a broader context, interviewees considered creative clusters as catalysts of development in Russian society. Clusters were seen not only as organizations promoting awareness of creative industries but also as actors developing the city as a whole. In general creative clusters were seen to have an impact at least on a city level and they were not tied to area specific communities.

In some cases creative clusters have also transformed formerly rough and unfriendly industrial neighborhoods into tourist attracting areas with creative and friendly atmosphere. Some of the interviewees emphasized clusters' role in preserving cultural heritage of the city.

"We also see part of our function to preserve the old buildings and reconstruct them. Because in Moscow it is not like in Europe, everything is not well here with architectural heritage." (cluster manager)

Interviewees generally supported the view that creative clusters facilitate the growth of innovational activities in society and that creative clusters can be considered as part of innovation system.

"A favorable environment needs to be created for innovations to emerge. And for sure, creative cluster where people can interact, where some creative combinations are born and where creative environment exists in general, it is very favorable for innovations. Innovations don't emerge in the line of soldiers who are marching by command."(expert)

All in all, it is mainly the enthusiasm and the will of the owners that can be seen behind developing creative clusters instead of developing a normal business center in these premises. As a basis for this enthusiasm, these people share common appreciation of culture and creativity. Many of the interviewees saw the cultural dimension of their creative clusters as more meaningful compared to the business side of the project. However, although the cultural dimension seems to be prevalent, business approach in cluster operations was not forgotten.

"We try to develop such project which would maximize profits for the owner and also would maintain the cultural dimension in such manner that the cultural dimension would help in generating profits and not the other way around."(cluster manager)

8.3.2. Market Conditions

According to interviewees the demand for creative industries has risen in Russian society during the last years. None of interviewed cluster managers saw finding tenants for clusters as challenging. On contrary, many clusters are lacking space for all potential tenants. High demand for provided spaces in creative clusters has allowed the clusters to be more selective in their choice of tenants. This has allowed them to maintain their operational focus and differentiate themselves more clearly from other players in the field.

"We have a selection policy when we are selecting tenants. Here we were really thinking who we will put in this building. We wanted it to be creative companies that are open to collaboration and willing to do some joint projects at our event space for instance." (cluster manager)

Differentiation strategy seems to be working for creative clusters. According to one interviewee positioning of space as creative cluster brought more demand than it would have ever brought if the cluster was a normal business center. Compared to ordinary business centers creative clusters are perceived in a different way and in some cases the demand is so high that companies are queuing to rent spaces that are still yet to be built.

"Around this area there are many business centers. If we would have just the regular business center here, it would be looking just the same or even worse than others in the area. The owners didn't have enough money to invest and make it a really fancy business center to be able to compete with others, so they decided to go to this creative cluster which is more differentiated." (cluster manager)

Also private companies from non-creative sectors have gradually started to generate interest towards creative clusters which is reflected in increased cooperation. Such forms of cooperation as joint projects and events were mentioned. According to one interviewee their cluster has a lot of partners and sponsors but usually the partnership is built on non-commercial principles. Cooperation takes forms of resource exchange or joint projects. One example of this kind of partnership was an event arranged by Absolut.

"They invited creators and did a very good exhibition with good artists branded by Absolut. And it was at the same time a good exhibition of young artists and at the same time it was a vodka presentation. This is very our situation. This is what we trying to develop, this kind of communication between money and the art." (cluster manager)

Other types of cooperation mentioned were educational events and launching of new products that were arranged by non-creative companies in creative clusters.

The clusters attract not only creative businesses but also consumers. People come there to enjoy their time and spend some money. For example Night of the Museums –event organized by Winzavod annually gathers thousands of people to the area to enjoy art. Most of the clusters saw their potential customers on consumer side as young people interested in arts and creative industries. However, some interviewees were skeptical about business potential of creative clusters on a consumer level because "*people go there to enjoy art, but not to buy as much".*

When it comes to cooperation with other clusters, most of it was limited to other creative clusters. In some rare cases creative clusters cooperated with non-creative clusters on project basis, for example by arranging fairs, exhibitions or selling of art pieces. Among creative clusters proximity to each other was seen as helpful especially

in terms of attracting clients. Cooperation was conducted also during some large events, which would be hard to handle for a single cluster. Contacts on personal level among creative clusters were well established which facilitated cooperation as well. Interviewees perceived creative community as " *a very small world where everybody knows each other very well".*

As for competition, according to interviewees creative clusters don't really compete with each other because of their different nature.

"There is no competition in the area or in Moscow. Other creative areas, they all have different positioning." (expert)

In general the interviewees perceived creative clusters as very different from other clusters as well as each other and they did not see any direct competition for any particular creative cluster. Rather, the creative clusters were perceived more as players of the same team.

"We cannot seriously talk about competition. It is rather like all the people thinking in the same way, as we would be in the same ecological movement or political party. They are our friends and they are people who are changing the world with us." (cluster manager)

8.3.3. *Financing*

Support for creative clusters in Russia seems to be rather limited. The main creative cluster's financial sources were owners' investments and rent income from the spaces. Also organized events were mentioned as a meaningful source of income in some clusters. Rents and owners' investments were considered to be more permanent sources of financing where as in some cases exhibitions and events were considered to bring high profits. However the income from events is less stable and for example financial crisis affected this income flow severely for some clusters. In most cases the clusters encountered drop in financing during the financial crisis, which slowed down the overall development process.

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Sponsoring was seen to be underdeveloped. Only private foundations were considered to be quite active in sponsoring activities of creative clusters. Private companies from other business sectors sponsored only certain types of events and sponsoring was also said to be very personal relations -oriented. However, interviewees expressed belief that sponsoring will increase and will be institutionalized in the future.

Financial support from the side of the state was considered to be almost non-existent. There is no permanent support for creative clusters from the side of the state. Getting governmental financial support for continuous development was seen as nearly impossible.

"The system of getting financing has not changed since the Soviet Union. If you are not established by the city, government or Ministry of Culture, you won't be able to get grants for continuous development. You will be able to get grants for specific projects but that's it." (cluster manager)

Some possibilities to get state support were seen in case of single events and projects, as long as these projects fitted state's rather narrow approach towards creative industries. Most of the projects and events funded by the state are related to traditional arts and traditional culture. However, also in these cases the support was criticized to be very small. Also subsidies are lacking completely as well as programs for financing of creative industries.

"From business point of view this is an ordinary business facility, like production factory. All the same as for other businesses, the same taxes, the same prices for land" (cluster manager)

Lack of subsidies for creative companies was in some cases replaced by cluster's own initiatives. Many clusters have differentiated approach towards rents. Usually, the rent for creative companies is less than for businesses in non-creative fields. In some cases creative actors were also provided with free exhibition premises. Most of the clusters also have a separate approach towards commercial and cultural events. These kinds of activities for supporting creative fields are mostly private initiatives of the owner or the management of a specific creative cluster.

The attitude towards state support was twofold. Some interviewees welcomed the state support and considered it to be a sign of interest from the side of authorities. According to their views a strong support from the side of the government is needed in order to seriously develop creative industries in Russia. One of proposed public support measures was a program for low-cost offices. Also a tax reduction system for organizations or companies renting spaces for creative actors was seen as one possible way of support. Apart from those who were in favor of governmental support there were some who saw any kind of state support as limiting for their activities.

"If you get government support and funding, it means that you have to follow their standards and their decisions and their policies and they are not always clever" (cluster manager)

Some interviewees also expressed a strong belief in their cluster's capabilities to cope without any support. Also a point that clusters have to be profitable in the long run without any other investment was mentioned.

"We are quite capable to do it by ourselves. Of course any help would be useful and helpful in a way. But again, there are no good examples of good governmental support here in this country. And I don't know who you have to be to get some serious support. We just simply don't believe in efficiency of such attempts." (cluster manager)

"There are a number of people who are professional grant suckers and they don't do anything good for culture. It is much more important to make such kind of situation in which not only creative businesses but all small businesses can develop in a proper way than to support or finance any things. Only purely non-profit things should be financed, for example education." (cluster manager)

Although some discussions about creative industries already exist on governmental level, nothing concrete to support creative industries has been done. Governmental structures are keener to support traditional culture and governmentally owned organizations in that field. Furthermore, such institutional problems as corruption and bureaucracy were seen as barriers for organizations' development in the field of

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creative industries. Also the decision making for financing was seen as unclear and it lacked transparency. A general opinion was that in many cases financing is not distributed fairly and especially in dividing big grants "there are some under-table things going on".

8.3.4. The Role of the State

As it was stated earlier, the demand for creative industries is growing in Russian society. However, according to the interviewees this development is almost completely ignored by the state and city authorities. The most common view on government's role in developing creative industries and creative clusters was that it is either negative or non-existent. A frequent thought was that it would be better that government would just stay out of the way of development. The initiatives, which are growing in the field, are the result of a dialogue between business people and non-commercial organizations. Moreover all these initiatives, including developing creative clusters, can be linked to motivation and good will of certain individuals. Some of the clusters have tried to approach authorities and offer their help in developing creative sector but the lack of interest has been obvious.

"Some time ago we actually wrote a concept of development of center for creative industries which was at least in the scale of the city. We wrote a lot of requests to the city authorities but didn't receive any response. None, nobody needs it." (cluster manager)

Apart from lack of interest, also lack of technologies and qualified people were mentioned.

"Even if Moscow government decides to spend money on that, it won't do any good because they don't have the technologies, don't have people who can realize the programs. You need other type of people." (expert)

The government was also criticized for its narrow approach towards innovations. Although there has been a lot of discussion about developing innovative society in Russia, the interviewees were quite skeptical about implementing these discussions

into practice. The innovation discussion was seen to be limited to science and technologies and there was a lack of trust in state's actions in the field. Though, some positive exceptions were mentioned.

"In Perm the local government is trying to develop some sort of design center there, plus contemporary art museum. So there the local government is quite innovative. It's a very good exception. The governor of Perm-region is very keen to support design and creative industries. But it's quite rare. Most of the people in power they just don't care about these issues" (expert)

Some responsibility for poor connections with authorities can be placed on creative sector itself. According to one interviewee the situation with authorities has slightly improved and the authorities have been more open to different ideas and projects, but many creatives are not willing to bring their ideas to the government because they are scared of being in the cycle of owning something to them. One interviewee from a creative cluster described the issue as follows:

"The trust is not built yet, but we would like to try. I think that the more successful pilot projects will be launched the more people will see that it is possible to do something of good quality with governmental support and the more chance it will get to grow." (cluster manager)

In general creative clusters tended to be very careful when dealing with government and tried to avoid every possible problem. A good example of this is regulation of land use. Most of the creative clusters are located in former factories, thus the land is designated for manufacturing purposes. This means that it is forbidden to have other functions on this land area. Although nobody actually controls the land use at the moment it could be a problem in the future. Clusters use different approaches to deal with this issue. Some of them apply for Moscow city authorities to change the designation of the land area; others have solved the issue by keeping some of the manufacturing activities of the old factory.

One of the reasons for avoiding involvement with governmental bodies was the fear for their misuse of power. State authorities use various methods, such as different

kinds of inspections, to control and influence the activities of a cluster. However, the situation is the same also in non-creative sector of economy.

"We have laws and regulations. If for some reason the government will think that the operations are dangerous they will find a way how to end them." (cluster manager)

However, a more positive picture of state authorities was brought up as well. According to one interviewee the people from governmental bodies are interested in the topic of creative industries and they can be seen for example attending lectures organized by creative clusters. Another interviewee mentioned that politicians in Moscow have some kind of feeling for the potential of creative industries but they don't know yet how to approach them and make a high quality projects. There were also some positive experiences from cooperation with city authorities. One cluster arranged an event with authorities from local district that were very keen and interested in developing the cluster and making it a cultural centre for the whole area. Since that event other joint projects such as art exhibitions have been introduced. In some cases officials were interested to develop creative activities in the district, which previously included nothing but industrial production.

8.3.5. Education and Training

Creative clusters of Moscow are quite active in the sphere of education and training. All of the clusters had at least some educational activities and some of the clusters had their own educational programs. Quite often educational activities contained international cooperation in forms of lectures by foreign professionals. Also active contacts with Russian educational organizations as well as attracting partners from business sector were part of education and training –related activities of creative clusters. One example of cooperation of creative cluster with an educational organization was a project where students redesigned cluster's bar area and gallery space. Also some cases where creative clusters provided spaces for students' exhibitions were mentioned.

Clusters' activity in education and training is partly explained by lack of quality in educational organizations that provide teaching in the sphere of creative industries.

Especially governmental educational structures in creative sector were criticized for ineffective management and lack of constant development. Most of educational organizations, governmental in particular, don't consider the needs of industry in their educational activities. In general governmentally owned organizations were seen to exist in completely different world and thinking in different categories. In most cases they were considered as conservative, non-flexible, and lacking aim orientation.

"They are like dinosaurs! It's a pity because it shouldn't be like that, but that's exactly what happens." (expert)

Apart from lack of quality education there is also an institutional challenge of low wages in cultural field. Most of the graduates from cultural arts management don't stay in profession due to poor wages. Both of these challenges made it difficult for creative clusters to attract qualified workforce. In many cases management personnel had to be trained by clusters themselves.

"It is almost impossible to find qualified workforce for the management of this kind of center. The biggest problem is that there is education but it is very bad quality. Education makes people even worse." (cluster manager)

The other reason for clusters activity in education was ideological one and the aim was to develop understanding and appreciation of creative industries in society. Quite often lectures and other educational events were provided for free and they were open to all interested. In addition to societal benefit these events were seen as good PR for the cluster itself.

8.3.6. International Orientation

Partly due to lack of domestic support and cooperation creative clusters have turned for cooperation towards other countries. Another reason for international cooperation was increasing the quality of events. Commonly foreign artists and partners were seen as the sign of better quality of an event or a project.

Apart from cooperation with foreign artists and companies, arranging exhibitions and other events for example together with trade associations and councils were mentioned in most cases of international cooperation. Among active foreign organizations British Council and Ford Foundation were mentioned rather frequently. Also international networking organizations such as Trans European Halles were mentioned. Such organizations provided contacts and exchange of ideas. In addition, exchange of personnel was made possible in some cases.

"The main thing for me is to meet different people. We have also made some festivals with partners from Trans European Halles. The informational resource is very interesting for us. We want to see how others are doing the things and it is a mainly network to exchange and develop ideas." (cluster manager)

Some interviewees mentioned tight cooperation ties with foreign educating institutions. For example, one of the clusters had its' own lecture program in the framework of which, leading international experts in creative industries were invited to give lectures.

The following table summarizes the key findings from the interviews.

Table 5: Key findings from the interviews

Creative clusters are seen as catalysts of development
There is a growing demand for creative industries in Russia among consumers and businesses
Creative clusters have cooperative approach towards other creative clusters instead of competing with them
The main financial sources of creative clusters are own investments, income from rents and income from events
There is a substantial lack of state support for creative clusters
There is lack of trust between state officials and creative sector
Creative clusters are active in education and training
Creative clusters have high rate of international cooperation

8.4. The Linkages of Creative Clusters of Moscow to Russian Innovation System

The aim of this section is to place interview findings into the context of theoretical framework presented earlier. Seven linkages of creative clusters to elements of the Star –model serve as a framework for analysis. These linkages connect creative clusters with: education and training, science and research, international network, financing and support organizations, innovation cycle, creative milieu, and market conditions. The analysis of interviews also revealed an additional linkage in the context of Russia. This linkage connects creative clusters to the state.

Linkage to education and training

According to Jaaniste's (2009) educational argument creative sector can take place of skills and training provider for would-be innovators throughout all domains and sectors. This is exactly what is happening in creative clusters of Moscow. Due to lack of quality education and imbalance between the needs of industry and skills provided by the educational sector, creative clusters have been active in education and training by themselves. Open-for-all educational policies and partnering with businesses have contributed to development of soft, creative and interpretive skills in all sectors of economy. Also the lack of management training in creative sector has resulted in shortage of quality managers for creative clusters and creative sector as a whole. The creative clusters have partly filled the gap by providing training for managers in creative sector. Hence, creative clusters have been building an educational bridge between business and creativity from both sides. Based on these arguments the linkage of creative clusters to education and training can be described as strong.

Linkage to science and research

No cases of cooperation of creative clusters with science and research sector came up during the interviews. Thus, on the basis of conducted interviews, the linkage of creative clusters to science and research does not exist in Russia. However, some interviewees were open to the idea of combining science and research with creativity

in their cluster. Also the meaning of creative clusters to development of innovation activities in society was generally acknowledged.

Linkage to international network

Creative clusters of Moscow can be seen as internationally oriented. In fact being first of a kind in Russia these clusters were developed according to experiences of such clusters in other countries. Thus, the initial orientation of creative clusters in Moscow was international. The situation has not changed. Pioneering the sphere, the creative clusters of Moscow can rely only on international experiences in developing the clusters further. Apart from being pioneers, a lack of financial support and lack of quality partners, particularly in Russian educational sphere, have enforced the international ties. In most cases, the only institutional support which clusters are able to get for their operations is international one. Another powerful driver for developing international cooperation has been the owners' and managers' strive for high quality. Quite often international partners were seen as a sign of high quality in events and projects. Also educational cooperation with leading international experts in the field took place in some clusters. Moreover, there might be a spillover effect of these kinds of activities to non-creative sectors of economy as well. In most cases educational activities of creative clusters are not limited to creative sectors only and these events and projects might facilitate establishing international contacts also in non-creative sectors. All of these arguments speak in favor of a strong linkage of creative clusters to international network.

Linkage to financing and support organizations

According to Jaaniste's (2009) cultural infrastructure argument the museums and cultural collection institutes are valuable repositories of knowledge and social memory of innovators. Adapting this view, the creative clusters can influence potential innovators by distributing knowledge in forms of exhibitions and events. According to the interviews the clusters are quite active in this field. However, this is a pretty thin connection to the support of innovations in general. A direct connection to financing and support structures is non-existent. Creative clusters are only rarely objects of support and also their influence on activities of supporting structures is minor. In many

cases the creative clusters themselves have taken a role of supporting organization for creative actors by subsidizing their rents and providing free spaces for exhibitions. Lack of support makes it impossible for creative clusters to create linkage to supporting structures. Therefore, although there is a thin connection of creative clusters to innovation supporting structures in forms of exhibitions and events distributing knowledge to potential innovators, it can be argued that there is no linkage of creative clusters to financing and support structures in Russia.

Linkage to innovation cycle

A linkage of creative clusters to innovation cycle is somewhat a debatable issue. The fundamental question lies in definition of innovation itself. If the definition of innovation is limited to science- and technology-based innovations only, then there are no innovations or innovation cycle in creative clusters. Also no cases of cooperation of creative actors from the clusters with companies creating science- and technology-based innovations were mentioned during the interviews. In this case the linkage of creative clusters to innovation cycle does not exist. However, if a broader definition for innovation is used and also innovations occurring in creative companies are taken into account then the linkage does exist. According to Jaaniste (2009) some forms of innovation, related to new content creation and aesthetic design directly reflect the core business of creative sector. Thus, creative sector itself can be considered as innovative and in this case creative clusters do have strong connection to innovation cycle. Since this study advocates for a broad definition of innovation, which includes also innovations occurring in creative sector, it can be stated here that the linkage between creative clusters and innovation cycle exists but only inside the creative sector.

Linkage to creative milieu

Interviewees supported the view of creative clusters creating climate for creativity in the city. The clusters were seen as catalysts of development and they were seen to have impact on city level at the least. Also a thought of clusters being a force for change was supported. In many cases the clusters were able to transform the territory of their location from rough and unfriendly to vivid and interesting place, which attracted people across the city. Some clusters attracted audience on a country level and also internationally. Transforming the area, attracting creative minded people and being a

force of change are important features in influencing culture for innovation. Therefore, it can be argued that the linkage of creative clusters to creative milieu does exist in Russia. It must be noted that acting as a force of change and transforming the area is particularly challenging in Russia, due to lack of support from the side of the government. The establishment and maintaining the linkage to creative milieu is mostly dependent on enthusiasm of certain people and their efforts. Thus, the linkage is not institutionalized and this creates certain risks for continuity.

Linkage to market conditions

Discussing the linkage to market conditions can be started from the side of demand. Interviews showed the increase in interest towards activities of creative clusters both on the side of consumers as well as businesses. When examining this trend in a wider context of innovations it can be stated that creativity and innovations go hand in hand. By noting the fact of the increased demand for creative industries it can be acknowledged that appreciation of creativity is on the rise in Russia. Thus, it must have a positive influence on innovations as well. Furthermore, increasing demand allows growth for creative clusters, which means creating new jobs, attracting more professionals and increasing competition. These are all prerequisites for increasing innovative activities inside creative clusters.

Also increased interest from the side of non-creative businesses must be noted. One of the possible roles of creative sector is to connect technological innovations to consumer markets by adding attractiveness, aesthetic qualities and creating content for the product. Increasing cooperating activities of creative actors with other businesses is a step in right direction. However, there is a fundamental problem of lack of innovative activities in non-creative sectors. Thus, even if the connection is there, at the moment creative sector can only rarely take the role of marketing and diffusing technological innovations, because there are so few of them.

Based on this discussion it can be stated that the linkage creative clusters to market conditions exists in Russia. However, due to small rate of innovations in non-creative sectors this linkage is working only inside of creative sector.

The analysis of interviews also revealed a need for adding one more linkage to the theoretical framework. This linkage is presented next.

Linkage to the state

Due to its strong ability to influence all aspects of national innovation system, including creative clusters, the role of the state is emphasized in Russia. But when it comes to development of creative clusters the role of the state was seen either negative or non-existent. Among other challenges lack of trust between authorities and creative sector was one of the biggest. However, there is an emerging interest towards creative industries in governmental bodies though this interest still hasn't achieved a critical mass of decision makers in order to transform into financial support and support programs. Some interviewees also brought up positive cases of cooperation with authorities as well. The most effective way of getting attention from authorities on the city level seemed to be establishing contact with authorities of local district and have them to back up the efforts towards authorities higher up the ladder. Despite all the challenges and strong person orientation of cooperation with authorities, the ice is moving and thus it can be argued that there is an emergent linkage of creative clusters to the state. Furthermore, establishing this linkage is important for the pace of future development of creative clusters as a part of national innovation system due to a strong role played by the state in all of the innovation system elements.

In the first part of this study creative industries were theoretically connected to national innovation system by establishing possible linkages of creative clusters to the elements of the Star –model. Next figure sums up the actual linkages of creative clusters to national innovation system in the context of Russia.

Figure 7: The role of creative clusters in Russian innovation system
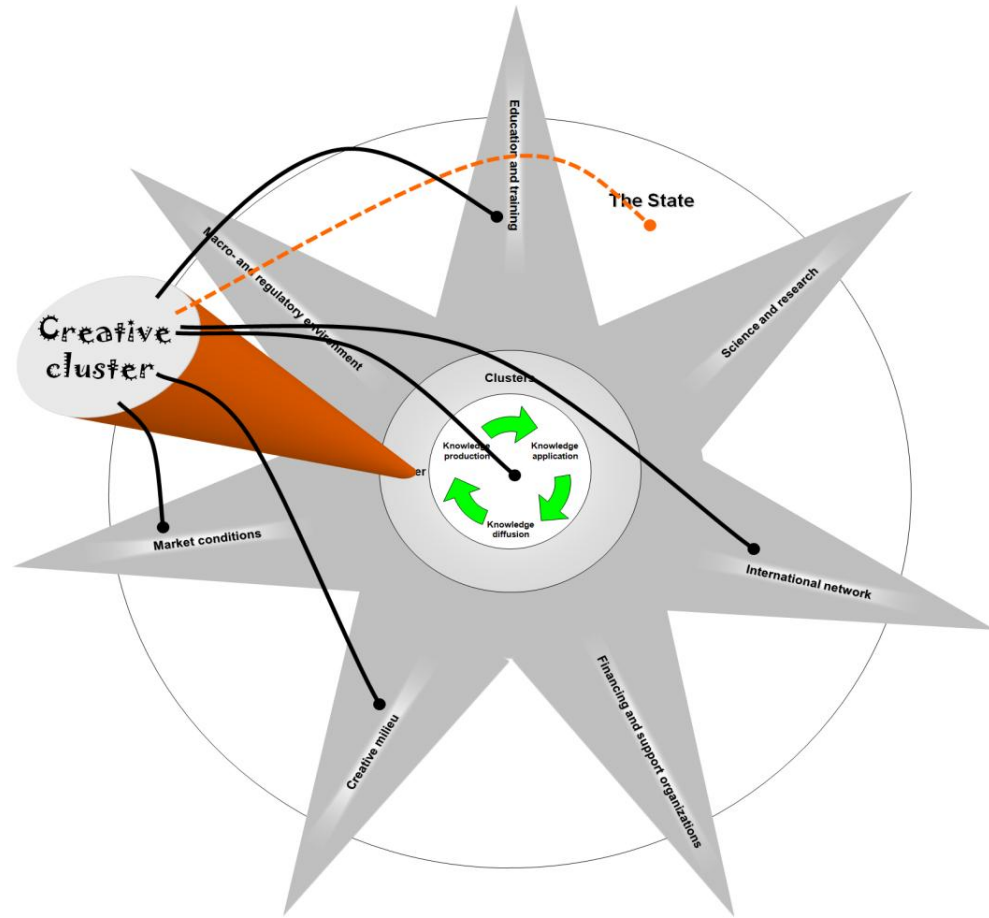
According to the conducted analysis creative clusters in Russia possess the strongest linkages towards education and training as well as towards international network. There are also established linkages of creative clusters towards innovation cycle, creative milieu, and market conditions. No linkages could be specified from creative clusters to science and research or to financing and support organizations. In addition a linkage from creative clusters to the state seems to be emerging. This linkage was not specified theoretically and therefore it must be added to the initial theoretical framework based on empirical arguments.

9. Conclusions

This study assessed the role of creative clusters in Russian innovation system. Both innovation and creative industries have been recognized as primary drivers of modern economies. However, little research has been done so far to link these two together. This research places creative clusters within the concept of national innovation system. Altogether, two theoretical aims were specified – to break technology –centricity of existing national innovation system approaches and to establish a clear role for creative industries in modern innovation system. A more practical aim was to evaluate the current state of Russian innovation system and unveil the innovative potential of Russian creative clusters for decision makers on state and city levels.

In the first part of the research, the theory of national innovation systems is explored, creative industries and clusters are carefully defined and placed within the concept of innovation. Exploring concepts of innovation and national innovation system revealed a need for modification of existing national innovation system models in order to fit modern economies better. As a result, a new theoretical framework for national innovation systems – the Star –model was developed and presented in chapter 5. Four key elements distinguish the Star –model from previous models of national innovation system. These are non-biased definition of innovation, central role of clusters, lack of distinction between broad and narrow innovation systems, and emphasized role of the state. Furthermore, the role of creative clusters in the Star –model is examined through seven linkages. These linkages connect creative clusters with education and training, science and research, international network, financing and support organizations, innovation cycle, creative milieu, and market conditions.

In practically oriented part of the study the current state of Russian innovation system was evaluated within the framework of the Star-model. Then a case study of Moscow's creative clusters was conducted in order to test the theoretical framework. Empirical

analysis showed that creative clusters in Russia possess linkages towards education and training, international network, innovation cycle, creative milieu, and market conditions. In addition a linkage from creative clusters to the state seems to be emerging.

Next, the theoretical and practical implications of the main findings of the study are evaluated. Also limitations of the study and some thoughts on future possibilities for the research are brought up. Finally, the study is concluded with some closing remarks of the author.

9.1.   Theoretical Implications

According to Whetten (1989) one possible way to contribute to theoretical discussion is to add factors which significantly alter our understanding of the phenomena by reorganizing our causal maps. In this study theoretical contribution is achieved first of all by including non-technological fields to the concept of national innovation system.

Although one of the originators of the NIS-concept, Lundvall (1992), did not include technology in his definition of national innovation system leaving room for non-technological fields, it was general technology centricity of innovation as a term which guided the development of NIS-theories to overstress technology. Thus, most of the theoretical models for national innovation systems conceptualize innovation too narrowly. One solution to overcome technology dependence is to use competitiveness models such as Porter's Diamond and its later modifications. However, the concept of competitiveness is not merely about innovations and these models cannot be applied for researching national innovation systems as such due to their far more general approach to the subject. Therefore, a revision of national innovation system –theory was needed. In this study a widely acknowledged but rather narrow technologically oriented innovation approach is replaced by a broader view on innovations recognizing innovative potential of non-technological fields. Furthermore, the concept of national innovation system is expanded to include non-technological innovations thus making it more suitable for assessing the full innovative potential of modern economies.

Apart from broadening the innovation approach, this study also supplements the concept of NIS with clustering theory. A significant amount of benefits of clustering for innovations was raised in this study. As a result, clusters are given the key role in the Star –model. Although, benefits of clustering have been acknowledged in the past, never clusters have been given such a central role in the earlier NIS-models.

Acknowledging innovative potential of non-technological fields allowed also a more complete perspective on a possible role of creative industries in NIS-theory. Culture and creative industries have traditionally been perceived separately from innovations, and linking these concepts together is a relatively new phenomenon. So far only few steps have been made in that direction. Another step is made in this study by providing a theoretical framework which links creative industries with national innovation system.

Since Russia was chosen as a context for evaluating the theoretical framework, transition economy –theories had to be addressed. Applying NIS-theories to the context of transition economies has so far been neglected. Only recently some efforts in this field have been made (see: Radosevic, 1999; Liu and White, 2001; Bakovic, 2010). Mainly these efforts have focused on comparative aspect between national innovation systems in developed economies and economies in transition. However, due to the fact that economies in transition possess significant distinctive features compared to developed economies, models that allow comparison between these economies have to maintain a very general approach. Therefore, none of the models applied to the context of developing economies is in fact well suited for an in-depth analysis of a national innovation system in a single country. The main objective of this study was not to create an extensive national innovation system –model for economies in transition. Nevertheless, it can be argued that by including some of the key distinctive features of transition economies in the Star –model, such as strong role of the state, the new theoretical framework is better suited for an in-depth analysis of national innovation systems in transition economies in comparison to the previous models.

9.2.   Practical Implications

The topic of economic modernization has been especially current for Russia during the last few years and the theme of innovations has been widely supported by top level authorities. However many challenges are yet to be overcome in building a fully functioning innovative economy in Russia.

On a practical level this study provides an overview of development of Russian innovation system and its current situation. This information can be useful for various stakeholders in Russia as well as in other countries for evaluating current situation of Russian innovation system and designing future actions and policies in this field.

In addition, this study presents a snapshot view of the current situation of creative clusters in Moscow. Based on empirical evidence this material gives a truthful view on the matter. This kind of information can serve as a tool for cluster managers to reflect their own experiences and to prepare for possible challenges. Furthermore, decision- and policy makers can use this information to access the needs and challenges in development of creative industries in Russia. This will help them to design support measures and target these measures more accurately.

An important aim of this study was to link creative industries and innovations together. From a practical point of view this linkage provides creative industries with new possibilities for cooperating with non-creative fields as well as opens a wide range of new sources for innovation-oriented financing. On the other hand, theoretical models provided in this research will make it easier for decision- and policy makers to perceive creative industries as an inseparable part of national innovation system.

9.3.   Limitations and Suggestions for Future Research

The focus of this study is on discovering the role of creative clusters in innovation system on national level. Firstly, national innovation system –theory is broadened to include non-technological fields and supplemented by clustering theory. Secondly, NIS-theory is linked with the concept of creative industries.

One of the main aims of this study was to break technology-centricity of national innovation systems. The research showed that reason behind this technology-centricity of NIS lies in technologically biased perception of innovations in general. While this issue was addressed briefly in the beginning of the study, the focus was made on national innovation systems –theory, not innovations as such. One possible prospect for future research would be exploring and altering the technology-centricity of innovation-theory on more general level.

Additional limitation for this study is caused by the context of Russia. Although, the study proved validity of the Star –model this time, there is no guarantee that the model will work for scrutinizing innovation systems of other countries. Thus, in order to improve validity of the Star –model, it must be tested in the context of other countries as well.

Focusing on creative clusters can be considered as another limitation. Moreover, the linkages of creative clusters towards national innovation system identified in the interview analysis will surely be different in the context of other countries. An interesting expansion to the topic would be exploring the role of other kinds of clusters in national innovation system in the framework of the Star –model both in Russia as well as in other countries. In case the Star –model is taken to the context of another country or a role of other type of cluster in innovation system is explored, additional possibilities for comparative studies will open up.

The case study gives a solid snap-shot picture of the phenomenon but the results of this study cannot be generalized. For that purpose more research needs to be done. In addition, the approach of this study is limited to national level only, thus results might be different on regional, municipal or other levels. A potential risk was also to select case clusters only from Moscow. This might have resulted in a biased perception of the phenomenon.

Despite limitations, this study provides a solid theoretical framework for national innovation systems which can easily be applied to other countries as well as to other types of clusters.

9.4.   Concluding Remarks

Modeling national innovation systems has relied on rather narrow approach to innovations for a number of years. The Star –model brings national innovation system –models up to date. By raising clusters to the spotlight, using non-biased definition of innovation and emphasizing the role of the state the model fits better the needs of modern economies, captures the benefits of clustering and acknowledges innovative potential of non-technological sectors. Furthermore, the model provides a clear framework for analyzing significant components of national innovation system.

The case study aimed at gathering more in-depth information about creative clusters' role in national innovation system raised many important issues. First of all, there is no meaningful support for creative clusters operations in the city of Moscow. Clusters have emerged without any kind of support from the side of the state and they are functioning on private money. In many cases the functioning of a cluster is dependent on enthusiasm of some individuals who are willing to invest time and money into cluster development.

However, there is an emerging interest in Russia towards creative industries in governmental bodies though this interest still hasn't achieved a critical mass of decision makers in order to transform into financial support and support programs. Some positive experiences of cooperation with authorities, on municipal level in particular, were mentioned in the interviews. The ice is moving and there is an emergent linkage of creative clusters to the state. The pace of development of creative clusters in Russia depends a lot from functioning of this linkage.

After a number of years of drawing attention to innovations in developed economies, only recently creativity has been emphasized as a source for these innovations. A simple causal relationship from creativity to innovations has finally found its way to decision makers' agendas and this has resulted in a number of support programs for creative industries and creative economy as a whole around the world. The topic of innovations and innovative economy has been current also for Russia. With the help of innovations the country is seeking to overcome raw material dependency and diversify the economy. However, Russia is only starting this journey. At the moment creative industries in Russia face same challenges as they did in so called developed economies

around ten years ago. And even in developed economies the process of integrating creative industries into innovation system is far from being over. Hopefully, for Russia, it won't take as long to realize the full innovative potential of creative industries. The sooner the innovation approach will be expanded and the role of creative industries in innovation system acknowledged, the better are chances for Russia to catch up the economically developed countries.

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11. Appendices

Appendix 1: Existing definitions of national innovation system (Niosi, 2002:292)

"The network of institutions in the public- and private-sectors whose activities and interactions initiate, import, modify and diffuse new technologies" (Freeman, 1987)
"The elements and relationships which interact in the production, diffusion and use of new, and economically useful knowledge... and are either located within or rooted inside the borders of a nation state" (Lundvall, 1992)
"The set of institutions whose interactions determine the innovative performance of national firms" (Nelson, 1993)
"The national system of innovation is constituted by the institutions and economic structures affecting the rate and direction of technological change in the society" (Edquist and Lundvall, 1993)
"The national institutions, their incentive structures and their competencies, that determine the rate and direction of technological learning (or the volume and composition of change generating activities) in a country" (Patel and Pavitt, 1994)
"That set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process. As such it is a system of interconnected institutions to create, store and transfer the knowledge, skills and artifacts which define new technologies" (Metcalfe,1995)
"A national system of innovation is the system of interacting private and public firms (either large or small), universities, and government agencies aiming at the production of science and technology within national borders. Interaction among these units may be technical, commercial, legal, social, and financial, in as much as the goal of the interaction is the development, protection, financing or regulation of new science and technology" (Niosi et al., 1993)

Appendix 2: Comparing overview about definition approaches of creative industries in Europe

Table 2   Comparing overview about definition approaches of Creative Industries in Europe

	UK	Austria	Finland	Germany	Spain	France		EU	Switzer-land	Hungary
Term used	Creative Industries	Creative Industries Austria/Vienna	Creative Industries	Culture Industries	Culture Industries (Industrias culturales)	Culture Industries (Industries Culturelles)	Cultural Sector (Secteur culturel)	Cultural Sector	Culture or Creative Industries	Culture or Creative Industries (often used synonymously)
Industry										
Architecture	x	Visual arts	x	x (excl. Cologne)			x	x	x	x
Archives	x	Cultural heritage	x		x		x	x	Literature/ publishing	x (Culture Industries)
Audio-visual field (film, TV, radio)	x	x	x	x (media)	x	x	x	x	x	x
Libraries		Cultural heritage	x		x		x	x	Literature/ publishing	x (Culture Industries)
Performing arts	x	x	x	x (theatre)	x		x	x	x	x
Design	x	Visual arts	x (and graphic arts)	x (NRW, Aachen, Cologne)			x		x	x
Craftwork	x		x	x (Hesse)					x	x
Art market	x	Visual arts	x	x			x		x (+ fine arts)	x

Appendix 3: Questionnaire

QUESTIONNAIRE

Background information

When was the center established?

What are centers' main functions? What does it do? what type of business?(renting space?)

What is centers juridical form of activity? public organization, ngo, non-commercial, private company?

How many workers do you have in the center? (not including artists, etc.)

Centers' operations

What sectors are represented in the center? (design, architecture, art, movies, music , etc.)

Does your center have a vision and mission? what are they?

What is the aim for operations? (making profit or ideological (cultural, political)

In which state of lifecycle would you describe your center to be? (early stages of growth, established (have room for further growth), mature (stable and hard to grow further), declining (reached its peak and popularity is falling))

What kinds of events are organized in the center?

What services does the center offer to the tenants? are they free?

What functions are performed in the center by tenants: production, presenting, consuming products/services?

Stakeholders

How does the center's management function? (who's in charge, decision making process)

What is the role of center's management? (strategic development, pr, marketing, daily management, negotiating of leasing agreements)

How hard is it to get qualified workforce to the center? what are the motivational factors?

Is there qualified workforce available in general?

Are all the materials and services needed easily available for the center? (raw materials, marketing, consulting, education etc.)

What kinds of customers/consumers/people are visiting the center? Is there an average customer of the center? Do customers visit center as a whole or are the customers visiting separate companies in the center?

Are center's visitors mainly from the nearby area or all over the city?

Is it easy to access the center? (metro, car, traffic) do you think that this affects success of the center?

Are there any competitors for the center? Are they located nearby? Does it matter?

What kind of tenants do you have in the center? (public organizations, non-commercial org., NGO's, private persons/artists, companies, foundations) How many?

What is the size of the companies in the center?

Is there any foreign cooperation? Do the companies from the cluster export something abroad?

How well are you known in general? Among potential customers? among competitors?

Operational environment

What is the role of government in development of the center/center's activities? Does it influence the development somehow? (financial support, other services, rent or other subsidies, creative industries policies, legislation(allowed to have profit?)) any changes?

Are there any regulations that influence the center?

Are there any other obstacles in operational environment for developing the center? (poor infrastructure etc.)

Has the demand for creative clusters/industries changed in Russian society during the last years? (improvement of quality of life)

How do you contribute to the cultural development of the city/region/country?

Inside cooperation

Do you do something to stimulate the cooperation between the companies inside the center?

Are there any joint activities? joint events? spaces for interacting in the center?

Is there any cooperation among/between the tenants/companies in the center? (common buying of materials, common selling of products and services, in marketing, new product development)

Financing

How is the center financed? (public, private, rent, sells, etc.) money sources?

Is there any kind of support from government? (government, grants, city officials, other public organizations)

Any other support?(private organizations, foreign funds, business angels)

What is the relation between public and private financing?

Are there any difficulties in acquiring the financing?

What is the revenue of the centre? is it profitable?

Has the crisis affected center's financial situation? in what way? (less income from customers, less tenants etc.)

Innovation

Is there any chance to combine innovation policies/programs with creative clusters? What is your opinion, do creative clusters belong under innovation?

How much emphasis do you put on innovation inside the center?

Do you somehow stimulate innovation process of the tenants? (new product development)

Premises

Why was this location chosen to establish the center? (location, price of rent, cooperation partners, public relations)

Has the center ever operated in another location/premises? what happened with that and why the center moved to another location?

Who owns the premises? (private owner, collectively, public/governmental org.)

Future

What can you say about the future development of the center? Is the center expanding? What's the growth percentage?

Are there any further possibilities to grow?

Are there any changes in governmental policies anticipated?

BUSINESS +
ECONOMY

ART +
DESIGN +
ARCHITECTURE

SCIENCE +
TECHNOLOGY

CROSSOVER

DOCTORAL
DISSERTATIONS