

MANAGEMENT OF CREATIVE KNOWLEDGE CENTERS IN THE CONTEXT OF TRIPLE HELIX MODEL

Arūnas Augustinaitis¹, Ramojus Reimeris²

¹*Kazimieras Simonavičius University, Kauno str. 34, LT-03202 Vilnius, Lithuania*
Email: arunas.augustinaitis@ksu.lt

²*Mykolas Romeris University, Valakupių str. 5, LT-10101, Vilnius, Lithuania*
Email: ramojus@reimeris.com

Abstract. This article examines the role and characteristics of Creative knowledge centers ("Valleys") in creative knowledge based society, article specifies the contexts and paradigms of Creative knowledge centers strategic planning, administration and management taking into account the development of creative knowledge based society in European Union and Lithuania. The goal of the article is to provide the alternatives and opportunities for development of Creative knowledge centers while combining various stakeholders' activities and interests. Overall aim is to methodologically justify the triple helix model application for development of the creative economy and increasing added value in it. The outcome of the research is the base for Creative knowledge centers planning, creation and management models and its application for policy cycle and management system improvement.

Keywords: knowledge economy, creative economy, triple helix, creative knowledge center.

Jel classification: O21, O32, O38

1. Introduction

The society is moving from modern state of existence to the postmodern state, which incitates the changes in the structure of everyday life and the aspects of economy, culture and social being. Creative knowledge centers (CKC), science and technology parks incorporated with cultural or creative industries parks are the signs of present global world revealing radical changes in all spheres of life. Not long ago, about two decades back, the boom of science and technology parks has started, which established the development of knowledge economy, now the boom of creative economy has started, which moved the understanding of scientific knowledge and orientation to high-tech development to the dimension of cultural values, esthetics and design. Creative economy is based on the culture what starts to generate the direct value. The world was systematical, hierarchical, with clear distinction between areas of activity. The economy was understood as production with clearly defined separate sectors. After the 90s the world became global, not so systematical, less hierarchical, and interactive and based on information society. The outcome of this reality forms the aim of this article. New social ties affect the management systems, which need to be more holistic and involve all possible actors in the process.

In this case the creative economy, as an intangible economy type, is developing according to pretty much the same criteria as knowledge economy. Creative economy – a 21st century phenomena based on consumption, that is not utilitarian simple, but symbolic satisfaction of higher social needs (Levickaitė, Reimeris 2011). This article examines the role and characteristics of Creative knowledge centers ("Valleys") in creative knowledge based society.

CKC logically extends and appends the activity of science and technology parks, which with the help of creative innovation gets the second wing, based on the creative economy. Actually, it is the knowledge economy what gets the second wing with the emergence of the concept of the creative economy. But the main question is how to manage the complex connection ties of this new form of economy in the context of society development and globalization?

The establishment of knowledge economy, globalization and international competition is increasing the importance of creativity and innovation in the internal economies of almost all countries (Yigitcanlar 2009). An entrepreneurial science model, combining basic research and teaching with technological innovation is displacing the "ivory tower" of knowledge for its own sake (Etzkowitz 2010). Innovation, the commercialization of crea-

tive and cultural activity and the creation of growing added value involve social, political, creative processes and even aspects of everyday life are the part of this process. Moral values and esthetics as the part of this knowing are becoming the part of the economy as well. The main goal of the article is to methodologically justify the triple helix model application for management and development of the creative economy.

It is agreed that knowledge is not only the key element of economical development but the key element of social development as well. Knowledge resources seek locations with other knowledge resources and support amenities, making it difficult for lagging places to compete (Luger 2005: 155). The impact of creative economy is ultimate not through traditional creative industries, but through skills and business models which are developing organizations and its intangible assets (Levickaitė, Reimeris 2011). The capital once was the main element of any growth now is mobile (Nezu 2005). Knowledge based manufacturing, mainly the clusters situated in knowledge dedicated area, has led to rapid and noticeable development of certain regions (for example the Silicon Valley, US). The collaboration and communication of such ventures, situated in knowledge regions promotes knowledge spill-over effects which works as a catalyst for new ventures establishment and development of new products and services. Sociologists and organization theorists have underlined the importance of the cognitive distance among agents in stimulating innovation, while other scholars have claimed that it is instead geographical proximity among firms – which often implies cognitive proximity – that fosters innovation (Rossi, Russo 2008). The examples of successful clusters shows that innovation systems are the most efficient when there is collaboration between various actors as business ventures, government support agencies, business associations, science and technology parks, universities and many other stakeholders (Nezu 2005). The management and initiation of such collaboration are illustrated by Triple helix model, which is applicable to CKC in the very same way. The “triple helix” is a spiral model of innovation that captures multiple reciprocal relationships at different points in the process of knowledge capitalization (Etzkowitz 2002). The attractive scientific and technological infrastructure is not the only and main criteria for innovation clusters, competence centers, integrated studies, science and business centers or CKC establishment. Examples around the world shows that regional governments (part of the Triple helix model) started to invest in quality of life and environment to attract talented workers - the workers of creative economy (Yigitcanlar 2009). The other

nonetheless important criteria are the established relations between universities and industry (the other part of the Triple helix model). It can be added, that the relations between knowledge centers – universities and industry is one of the main topics in the policy makers agenda dating back to 1990 (Nezu 2005). They comprise more traditional linkages, such as student placement schemes, staff exchanges, consultancy services, continuing professional development, and joint R&D, as well as more recent activities such as small enterprise development, creation of spin-offs and development of consortia for collaborative R&D at the international level (Martin 2011).

Many European countries face the management problem of making the local competence centers more attractive for direct foreign investment (Guimon 2011). The questions of CKC strategy, administration and management are becoming the inseparable part of the national policy, despite this phenomena has not been fully investigated. Broad-based innovation policy aims to promote both technological and social innovation (Ramstad 2009). The management and development of CKC is affected by many factors which are provided in the article as main preconditions for this process. CKC are the integrators of many different processes as has been described in this section. Many ties of present life is interconnected in this new economical phenomenon and it can not be managed in already established ways.

2. The role of Creative knowledge centers in the society

Knowledge based industries, such as high and middle tech manufacturing, hightech services, business services, financial services, health and educational services are the essential element of postindustrial socioeconomical development. Smart places understand their place in the new economy of the 21st century. They recognize that there is no future in low-skilled, low-tech jobs (Luger 2005). National and regional governments face ever increasing difficulties while planning points of attraction and business centers of countries, cities or regions, because the traditional planning and strategic management mechanisms does not satisfy the conditions of knowledge and creative economies (Yigitcanlar 2009).

CKC can consist of various ventures, public and private universities, science and technology parks, research centers and etc. All of these components have its own organizational identity and traditions, management mechanisms and market based location preferences. In the connection of knowledge economy and mobility, these entities evolve into

new complex and multilevel formations, with new ties between studies, science and business, which are connected with vertical and horizontal structural ties involving the members of such organization – the citizens (Raipa 2009). Such citizens’ technologies, as a Triple helix model action, can evolve only when the society has a real demand, when such citizens’ technologies become the factor of survival, competition and development (Augustinaitis, Petrauskas 2010).

In the successful CKC, such as Helsinki digital village, Crossroads Copenhagen, Singapore One-North or Silicon Valley the elements of development are the workers living place, working place, learning space and entertainment spaces. Such CKC are the countries, regions or cities economical development catalysts. They are the life laboratories with merged working, home and leisure environments (Yigitcanlar 2009). In addition, the important criterion is the involvement of foreign capital which brings dual benefits: direct, through activity in certain research areas; and indirect: impact to the environment in formal and informal means (Guimon 2011). The main criteria for the formation of CKC are:

Table 1. Main preconditions for Creative knowledge center formation. Adopted from T. Yigitcanlar (2009)

1. The structure of knowledge industry.
2. The structure of creative workers.
3. Multiculturalism.
4. Connectivity.
5. The quality of living space and life.
6. Knowledge society senters.
7. Effective government.
8. Foreign capital.

The identification of these criteria allows to formulate CKC development and management strategies.

3. The new paradigms of Triple helix model

The strengthening links between public research base and industry is moving closer into alignment with industry-university collaboration trend in USA (David, Metcalfe 2010). Many countries are going through institutional reorganization trying to establish the mechanisms of Triple helix model. However these goals and the related problematics has received little research yet (Fixari *et al.* 2009). In the literature about Triple helix model actors the main attention is focused on the transformations of the roles if university and government, meanwhile the functions and roles of industry (business) are mentioned carefully due to established market

rules. The industry is the fastest from all three actors to adapt to the ever-changing environment and is always benefit oriented. The industry views universities as a future source of employees and as a source of useful information (Etzkowitz 2010). The development and diffusion of innovative “products” is traditionally the realm of industry and is based primarily on expected return on investment (King 2008). If the same logic would be applied to all three actors in order to achieve the maximized benefit for each and every of the three spheres, there would be no synergetic, collaboration oriented changes for the overall positive result. It can be concluded, that the roles of university and government *de facto* are more adaptive to industry than vice versa.

The Triple helix model should be understood as development and innovation model with its spheres – university, industry and government – in constant evolution and connection with each other in various levels. This model has become the typical theoretical public policy formation structure in Europe (Fixari *et al.* 2009).

Bechina *et al.* delivers the upgraded Triple helix model with the network concept added to the university and industry actors – GUIN (government, university, industry, networks) (Fig.1). The role of the government is depicted as a catalyst for the university and industry relations. This position is supported by World intelectual property organization (WIPO). The WIPO report states that universities, public financed research institutions and industry should establish the right connections by their iniciative, but governments should also take responsibility for proper legal base and for these initiatives required practices (Nezu 2005). The role of the government, which establishes university and industry collaboration goals and strategies can be transfered to international actors or programmes, such as European Union, OECD, UN, World bank and etc.).



Fig.1. Triple helix model: GUIN. Adopted from Bechina *et al.* (2009)

University represents the network of national and international actors which consists of collaboration between universities, joint research programmes, institutes, faculties, staff exchange pro-

grammes, visiting professors, postdoc students, joint academical programmes and etc. Industry is represented by network of partners, providers, consumers, investors, competitors and similar actors (Bechina *et al.* 2009). The roles of all actors in the model are important as the synergy and effective management of every sphere, but the roles of the university should be distinguished. As mentioned before, the CKC can be formed on the existing knowledge capital, which is accumulated in the university and its network.

Universities are established in the society as the part of knowledge production system. According to H. Etzkowitz if the university identifies itself as participant of regional and national development they can be seen as entrepreneurial universities, what is crucial for CKC establishment and further development (Etzkowitz, Leydesdorff 2003; Dooley *et al.* 2011). Before the establishment of Triple helix model, the main missions of the university was to disseminate knowledge through teaching and perfect knowledge through research. Along with these functions the university is set up for the third one – to contribute to economical development. The university with an entrepreneurial direction has characteristics like global mission, research intensity, new roles of professors, diversified funding, worldwide recruitment, increasing complexity, new relationships with government and industry, and global collaboration with similar institutions (Mohrman *et al.* 2008). Entrepreneurial university has these functions:

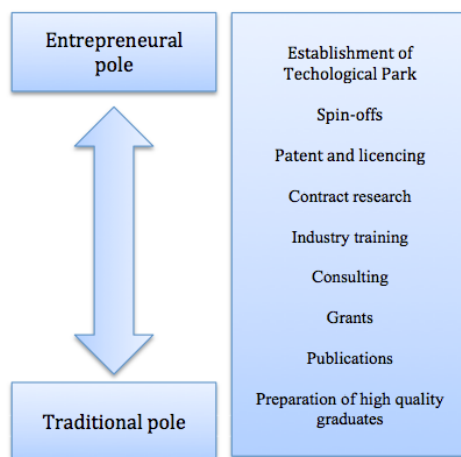


Fig.2. Poles of universities' third mission. Adapted from Dooley *et al.* (2011)

The traditional pole is fundamental for all other listed activities. The entrepreneurial pole requires substantial quantity of university's resources, but provides a reasonable return of investment in various forms. Technological park (or research park) involves cultural divide between commerce and academia, because of capital generation from cost-

effective labs (Betteridge 2009). Spin-offs are more valuable mechanisms for job creation than the alternative methods of technology transfer and commercialization by existing firms because they tend to commercialize different inventions and in particular they focus on inventions that are too uncertain or at too early stage for established companies (Shane 2005). Entrepreneurial university activities should be initiated in a bottom-up manner to strengthen the motivation of members in the institution (Dooley *et al.* 2011). The third mission of the university should be clearly put in real practical activities and in the internal organizational culture. Concentration on the activities that are in the middle of the Fig. 2, such as consulting, industry training and contract research would allow the personnel of university to focus more on the knowledge transfer functions rather than income generation (Dooley *et al.* 2011). The management of the university should promote the third function and even initiate learning activities for the personnel to deliver the concepts of universities' third mission, otherwise the academic community might split into two mentioned poles (Dooley *et al.* 2011).

The strategic management task of the administration of university – to develop the third mission is one of the most important tasks for application, management and development of Triple helix model. If this goal is not reached and universities will be passive partners in the collaboration of the three spheres, the model will not work, the huge amount of public and private resources will be spent inefficiently trying to boost the countries, regions or cities knowledge economy and its commitment to the overall national socioeconomical benefit.

4. The concepts of Creative knowledge center management and development in the creative economy context

The concentration, management and development of the Creative centers require holistic approach from all of the Triple helix spheres combining various stakeholders' activities and interests. First, it is joint coordinated efforts for economical development, secondly it is continuous investment in human capital, intellectual and social capital, and thirdly it is strong spatial ties between clusters, promoting knowledge spillover. Mentioned factors should be planned and managed as innovation systems or part of such systems. When region is missing innovation systems, it is important for some organization of group to play the role of regional innovation organizer and bring the various elements of the triple helix together to foster new projects (Viale, Etzkowitz 2010). As mentioned before, the government is the main catalyst for the

Triple helix model, it has to promote and ensure the collaboration between the networks of universities and industry. The government can encourage cluster development and upgrading by removing obstacles and relieve constraints, including human resources, infrastructure and regulation (Teekasap 2009). The policy mix should be aimed at three main goals (Nezu 2005):

1. The government has to clearly set the direction for universities and industry;
2. It has to establish the legal rules of universities and industry behavior;
3. Has to provide incentives for cooperation and the necessary resources.

The combination of these goals is the main task for the government achievable through policy mix which sets the framework for university – industry relations. The primary role of innovation policy is to create a variety of mechanisms to facilitate the capture and assimilation of local and external knowledge (Autant-Bernard *et al.* 2010). Taking a closer look at the role of the government in CKC management Table 1 can be expanded to:

Table 2. Government sphere strategic goals. Adapted from Guimon (2011) and Yigitcanlar (2009)

CKC formation assumption	Strategic goal
<i>The quality of labour (to 2nd and 3rd items in the Tab. 1)</i>	To develop educational system, increase its capacity and quality in order to attract foreign students and researchrs
<i>The quality of universities, research centers, technology parks and other research infrastructure (to 2nd and 3rd items in the Tab. 1)</i>	To ensure proper financing for R&D activities and effective R&D infrastructure management
<i>Fiscal and financial initiatives for R&D in private sector</i>	To increase private sector initiatives and spending on R&D and its volume in various phases
<i>Collaboration of national innovation systems actors (to 7th item in the Tab. 1)</i>	To promote collaboration and common understanding of goals, effective means of administration, transparency
<i>The existance of markets for leading technology (to 1st and 8th items in the Tab. 1)</i>	Foreign ventures attraction to become involved in national competence areas
<i>Clear intellectual property rights</i>	To promote the culture of intellectual property rights security and transfer

Highlighted assumptions and goals in Table 2 and GUIN Triple helix model in Fig. 1 are the

foundation of CKC management model. The network of university actors, which connects scientists, students, interns and administration, is the human capital basis of the model. Also it is the innovation based knowledge network providing these necessary resources for other two of the spheres. The network of industry, which connects capital, various industries, ventures and markets, is powered by economical interest. This interest also applies to the other two spheres of the model. The sphere of the government combines public interest and political, economical goals of the country in general. Government participates in the model according to the strategic goals (Table 2) in the form of policy mix. The center of the all three spheres operation field is the Creative knowledge center.

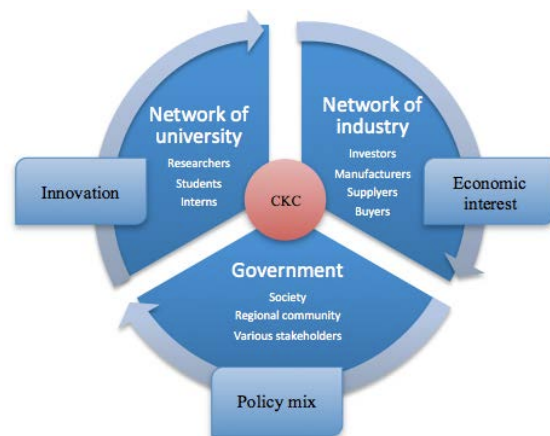


Fig.3. Triple helix model for management and development of Creative knowledge centers

The proposed model has to operate in three levels (Fixari *et al.* 2009):

1. Competence clusters, which goal is to geographically concentrate actors from business, science and education, encourage these actors to collaborate on research;
2. Research and higher education centers, which goal is to promote geographically concentrated interuniversity collaboration, multidisciplinary;
3. Advanced thematical research networks, which goal is to attract highes level scientists to geographically concentrated research centers.

CKC, based on the proposed model in Fig. 3 is a tool to measure impact, efectivness and results of policy mix. The monitoring and analysis schemes of this model should not be concentrated on one institution or sphere at the time, but be more holistic and concentrate more on the region or territory (Fixari *et al.* 2009).

As a potential threat to the model and effective management of CKC can be mentioned different

positions of various ministries and government agencies, the lack of communication between them. For example, the ministry responsible for higher education does not necessarily agree with the ministry responsible for economical development. They can start competition for preferred national resources allocation and more influence in the system. The CKC management model will not be effective in this case (Nezu 2005).

Wide evidences now support a sound skepticism about the ability to originate hi-tech clusters by decree. It is common, that innovation policies are continuously subject to rapidly changing fads (Massa, Testa 2008). The Triple helix collaboration may be idealistic because it will only work if the players are relatively free to follow the framework and guidelines they think are right and are not overly influenced by another helix (King 2008).

5. Conclusions

The emergence of the second wing of the new economy – the creative economy and its management concepts remains the one of the main questions of postmodern society. The outcome of this research is the base for Creative knowledge centers planning, creation and management model and its application for policy cycle and management system improvement. The proposed Creative knowledge centers (CKC) management model illustrates complex connection ties of the actors that extend into the society. It places the Triple Helix model into the creative economy concept together with the new identified priorities for the each of the sphere. It's not new, that innovation from university, economic interest from industry and policy mix from the government is crucial for national development. The new is the way they collaborate and get involved in synergic relationship, but at the same remains dependent on each other. Greater emphasis in this article is put on the sphere of the universities as the source for creative knowledge. Universities can and does participate in the model as much as they reorganize themselves and promote the third mission of the university. They tend to connect the technology, culture and lifestyle and that is the key element of the creative economy (as a distinction from the knowledge economy).

Creative knowledge centers (CKC) integrates a lot of different components and aspects of modern society and life. It is important to understand that various stakeholders are connected in the CKC in multilevel ties. The connections are based on the geographical factor, what stands for clustering and similar business activities, on science, what stands for research and development and last but not

least – on culture, what stands for overall environment and shared understandings.

This article brings forward the further research guidelines for management and development of each of the described spheres (university, industry, government). As the spheres are so broad and ever changing, there is still not enough scientific proof for solving the management and development problems for better results. Triple Helix model is the convenient concept that can be adjusted to reflect the new pace and tendencies of the new economies (and show the multilevel ties). It also can be used as an instrument to tune up the performance of the spheres or as a model to represent the complex relationships between various actors and stakeholders. The further steps of the proposed CKC management model should be its application and monitoring in various environments.

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